National Panasonic

SERVICE MANUAL

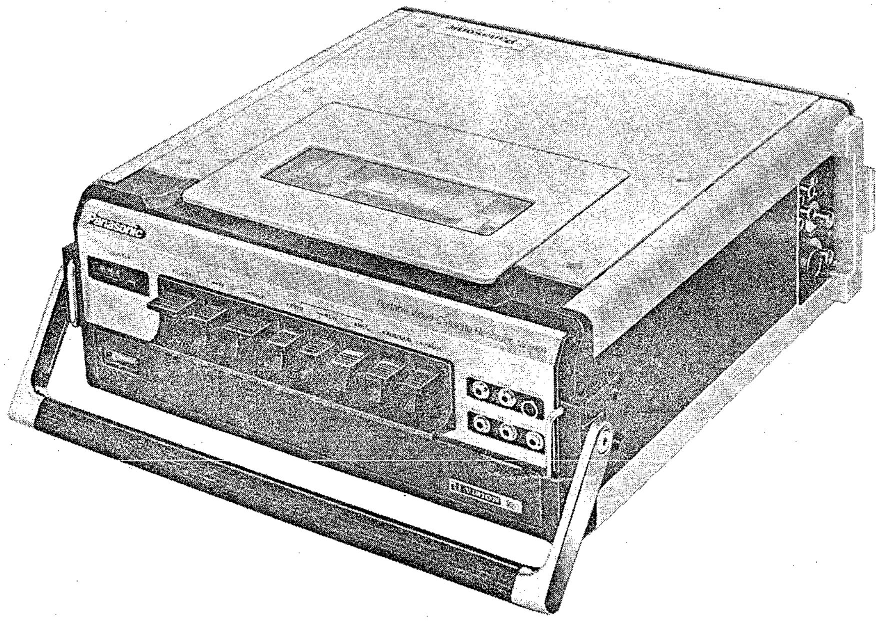
MODEL **NV-9400**
MODEL **NV-B50**

MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.

ORDER NO. VRD-8009-429

Service Manual

Portable Video Cassette Recorder
NV-9400



SPECIFICATIONS

Power Source:	12V DC: 120V AC, 50/60Hz (with AC adaptor)
Power Consumption:	Approx. 14 watts
Television System:	CCIR: 625 lines, 50 fields PAL, colour signal
Video Recording System:	2 rotary heads, helical scanning system Luminance: frequency modulation Colour signal: converted subcarrier, direct recording
Audio Track:	2 tracks
Tape Format:	Tape width 3/4 inch (19mm), high density tape
Tape Speed:	3-3/4 i.p.s. (95.3mm/s)
Record/Playback Time:	20 min. with NV-P22S
FF Time:	Less than 3 min. with NV-P22S
REW Time:	Less than 2 min. with NV-P22S
Heads:	Video: 2 rotary heads Audio/Control: 1 stationary head Erase: 1 full track erase 1 audio track erase for audio dubbing (CH1)
Input Level:	Video: VIDEO IN connector (BNC) 0.5V to 2.0Vp-p, 75Ω unbalanced Audio: MIC jack (Miniature phone jack) ×2 −70dBm 600Ω unbalanced LINE jack (RCA) ×2 −20dB, 220kΩ unbalanced
Output Level:	Video: VIDEO OUT connector (BNC) 1.0Vp-p, 75Ω unbalanced Audio: LINE OUT jack (RCA) ×2 −3dB, open EARPHONE jack (M3) ×2 −32dB, 8Ω unbalanced
Video Horizontal Resolution:	Colour: better than 240 lines
(on monoscope test pattern):	B/W: better than 320 lines
Audio Frequency Response:	80—12,000Hz
Signal-to-Noise Ratio:	Video: better than 45dB (Rohde & Schwarz noise meter) Audio: better than 40dB
Audio Cross Talk:	Better than 40dB
Operating Temperature:	41°F—104°F (5°C—40°C)
Operating Humidity:	35%—80%
Weight:	21.56 lbs. (9.8kg) [without battery]
Dimensions:	13-7/32″(W) × 14-17/32″(D) × 5-9/16″(H) 336(W) × 369(D) × 141(H) mm [excluding handle]
Standard Accessories: (supplied)	Earphone.............................1
Optional Accessories:	Colour video camera AC adaptor, NV-B50E RF converter, NV-U47AE NV-U47AB Car battery cord, NV-C24 Video soft case, NV-H24 Video shoulder band, NV-H25

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

Panasonic

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

INTRODUCTION

This service manual presents technical information to allow VTR service technicians to understand and service the Panasonic 3/4″ Portable Video Cassette Recorder Model NV-9400E.
The NV-9400E has many special features;

1. *Three-way power source: rechargeable battery, 12 V battery power source with optional car battery cable (NV-C24) or optional AC adaptor/battery recharge NV-B50E.*
2. *Capstan servo system.*
3. *Automatic assembly editing (AAE) from Stop mode.*
4. *Dropout/noise compensator.*
5. *Automatic phase control (APC).*
6. *Two audio channels; audio dubbing on channel 1.*
7. *Five function meter; video level, audio channel 1, audio channel 2, battery voltage and servo lock.*
8. *Optional RF converter NV-U47A plugs into NV-9400E for playback on TV channel 47.*
9. *NV-P22S 3/4″ cassettes recorded on NV-9400E can be played on other U-format VCR's.*

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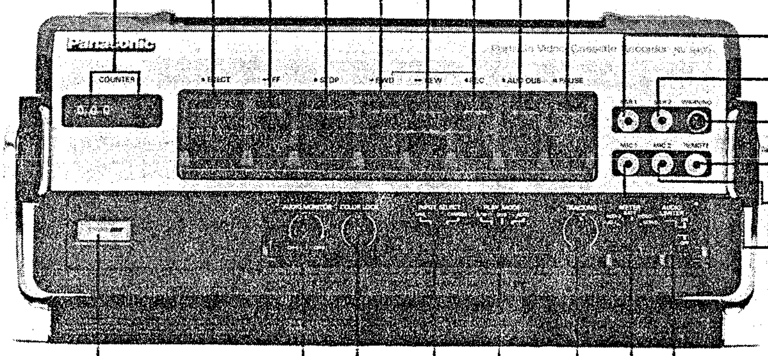
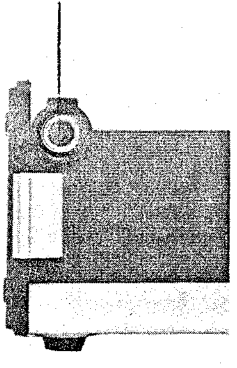
MAJOR OPERATING COMPONENTS

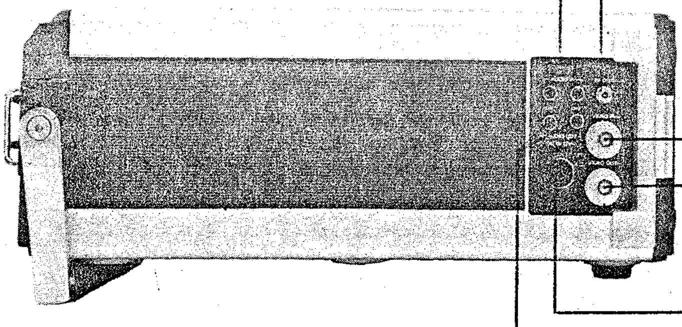
TOP


① Tape Counter (COUNTER)/Reset Button
② Eject Button (EJECT)
③ Fast Forward Button (FF)
④ Stop Button (STOP)
⑤ Forward Button (FWD)
⑥ Rewind Button (REW)
⑦ Record Button (REC)
⑧ Audio Dubbing Button (AUD DUB)
⑨ Pause Button (PAUSE)
⑩ Earphone Jack (EAR-1)
⑪ Earphone Jack (EAR-2)
⑫ Warning Lamp (WARNING)
⑬ Remote Control Jack (REMOTE)
⑭ Microphone Jack (MIC-2)
⑮ Microphone Jack (MIC-1)
⑯ Audio Limiter Selector (AUDIO LIMITER)
⑰ Meter Selector (METER)
⑱ Tracking Control (TRACKING)
⑲ Playback Mode Selector (PLAY MODE)
⑳ Input Signal Selector (INPUT SELECT)
㉑ Colour Lock Adjuster (COLOUR LOCK)
㉒ Audio Monitor Control (AUDIO MONITOR)
㉓ Check Meter

LEFT SIDE


㉔ Camera Input Connector (CAMERA)

RIGHT SIDE


㉕ Audio Input Jacks (AUDIO IN)
㉖ RF Output Jack (RF OUT)
㉗ Video Input Connector (VIDEO IN)
㉘ Video Output Connector (VIDEO OUT)
㉙ DC Power Input Connector (DC IN)
㉚ Audio Output Jacks (AUDIO OUT)

CONTROLS AND THEIR FUNCTIONS

TOP VIEW

① **Tape Counter/Reset Button (COUNTER)**

Pressing the button resets the tape counter to "000". The counter is used to find the starting point of a recording.

② **Eject Button (EJECT)**

Press this button to raise the cassette compartment.

③ **Fast Forward Button (FF)**

When this button is pressed, the tape is rapidly moved in the forward direction.

④ **Stop Button (STOP)**

Pressing this button causes all operations to stop.

⑤ **Forward Button (FWD)**

Pressing this button starts playback operation.

⑥ **Rewind Button (REW)**

This button is used to rewind the tape.

⑦ **Record Button (REC)**

To make a recording, press this button first and press the Forward Button ⑤ while the Record Button is being pressed.

⑧ **Audio Dubbing Button (AUD DUB)**

To make an audio dub, press this button first and press the Forward Button ⑤ while the Audio Dubbing Button is being pressed.

⑨ **Pause Button (PAUSE)**

To pause, press this button. In the playback mode, a still image will appear. To resume normal playback, press this button again.

Pressing this button during recording stops the recording temporarily.

⑩ **Earphone Jack (EAR-1)**

By connecting an earphone to this jack, audio channel 1 can be monitored. Also, audio dubbing can be monitored.

⑪ **Earphone Jack (EAR-2)**

By connecting an earphone to this jack, playback signals of audio CH-1, audio CH-2 or both audio CH-1/CH-2 can be monitored by selecting the Audio Monitor Control ㉒ . Also, recording audio CH-2 sound can be monitored.

⑫ **Warning Lamp (WARNING)**

This lamp flashes when the built-in battery is exhausted or when dew has formed inside the unit.

⑬ **Remote Control Jack (REMOTE)**

During camera record mode, the operation can be temporarily stopped by a remote switch.

(Acts as the start switch of the camera)

⑭ **Microphone Jack (MIC-2)**

When an external microphone is connected to this jack, recording is made on audio channel 2.

⑮ **Microphone Jack (MIC-1)**

When an external microphone is connected to this jack, recording is made on audio channel 1.

This jack is also used for audio dubbing.

⑯ **Audio Limiter Selector (AUDIO LIMITER)**

ON: Audio recording is made without distortion even in the case of an instantaneously large level audio input signal which exceeds the standard level.

OFF: The audio recording level is determined by the level of the input audio signal. There is no limiting action.

⑰ **Meter Selector (METER)**

By moving this switch, battery, audio levels (CH-1, CH-2), video level and servo lock can be checked through Check Meter ㉓ .

⑱ **Tracking Control (TRACKING)**

This knob is used to adjust tracking if noise or streaks appear on the picture during the playback of a tape. Normally, it is kept in its "FIX" position.

⑲ **Playback Mode Selector (PLAY MODE)**

This switch works in the playback mode only. Set this switch according to following instructions:

B/W: To edit* a color program onto a B/W program or to monitor a color program on a B/W monitor, set this switch to the "B/W" mode. (Chrominance signal including burst is eliminated).

DUB: To dub* (color program), set this switch to the "DUB" mode.

AUDIO: Normally, this selector is kept in the "AUTO" mode.

* This unit is used as a source unit.

⑳ **Input Signal Selector (INPUT SELECT)**

CAMERA: When a portable color camera is used, set the selector to the "CAMERA" mode.

Note:

If this selector is left in the "CAMERA" mode, the unit will not go into the playback mode unless the portable color camera is connected and its start switch is activated or the Remote Control Jack (13) is grounded by the remote switch.

LINE: When other signal sources are used, set this selector to the "LINE" mode.

㉑ **Colour Lock Adjuster (COLOUR LOCK)**

If the playback picture has the wrong colour hue or colour banding, it may be necessary to adjust this control. Normally, it is kept in its "FIX" position.

㉒ **Audio Monitor Control (AUDIO MONITOR)**

This control works in the playback mode only. It has no effect in the record mode.

CH-1: Audio CH-1 playback signal only appears at the Audio CH-2 Line Output, Earphone Jack (EAR-2) ⑪ and through the RF converter, if used.

MIX: Both Audio CH-1 and CH-2 playback signals appear at the Audio CH-2 Line Output, Earphone Jack (EAR-2) and through the RF converter, if used.

CH-2: Audio CH-2 playback signal only appears at the Audio CH-2 Line Output, Earphone Jack (EAR-2) and through the RF converter, if used.

㉓ **Check Meter (METER)**

This meter indicates the battery charge, audio levels (CH-1, CH-2), video or servo lock condition, as selected by the Meter Selector ⑰ .

LEFT SIDE VIEW

㉔ **Camera Input Connector (CAMERA)**

This terminal is for connection of a portable colorcamera to the recorder.

RIGHT SIDE VIEW

㉕ **Audio Input Jacks (AUDIO IN)**

This terminal is for connection of a tape recorder or record player, etc. (−20dB), to the recorder.

㉖ **RF Output Jack (RF OUT)**

This Jack is for connection of a TV set to the recorder when the NV-U47AE converter (optional) is used.

㉗ **Video Input Connector (VIDEO IN)**

This connector is for connection of a video signal source (composite signal) such as a video camera, to the recorder.

㉘ **Video Output Connector (VIDEO OUT)**

This connector is for connection of a TV monitor or other video equipment to the recorder.

㉙ **DC Power Input Connector (DC IN)**

This connector is for connection of an external DC power source such as an AC adaptor or car battery to the recorder.

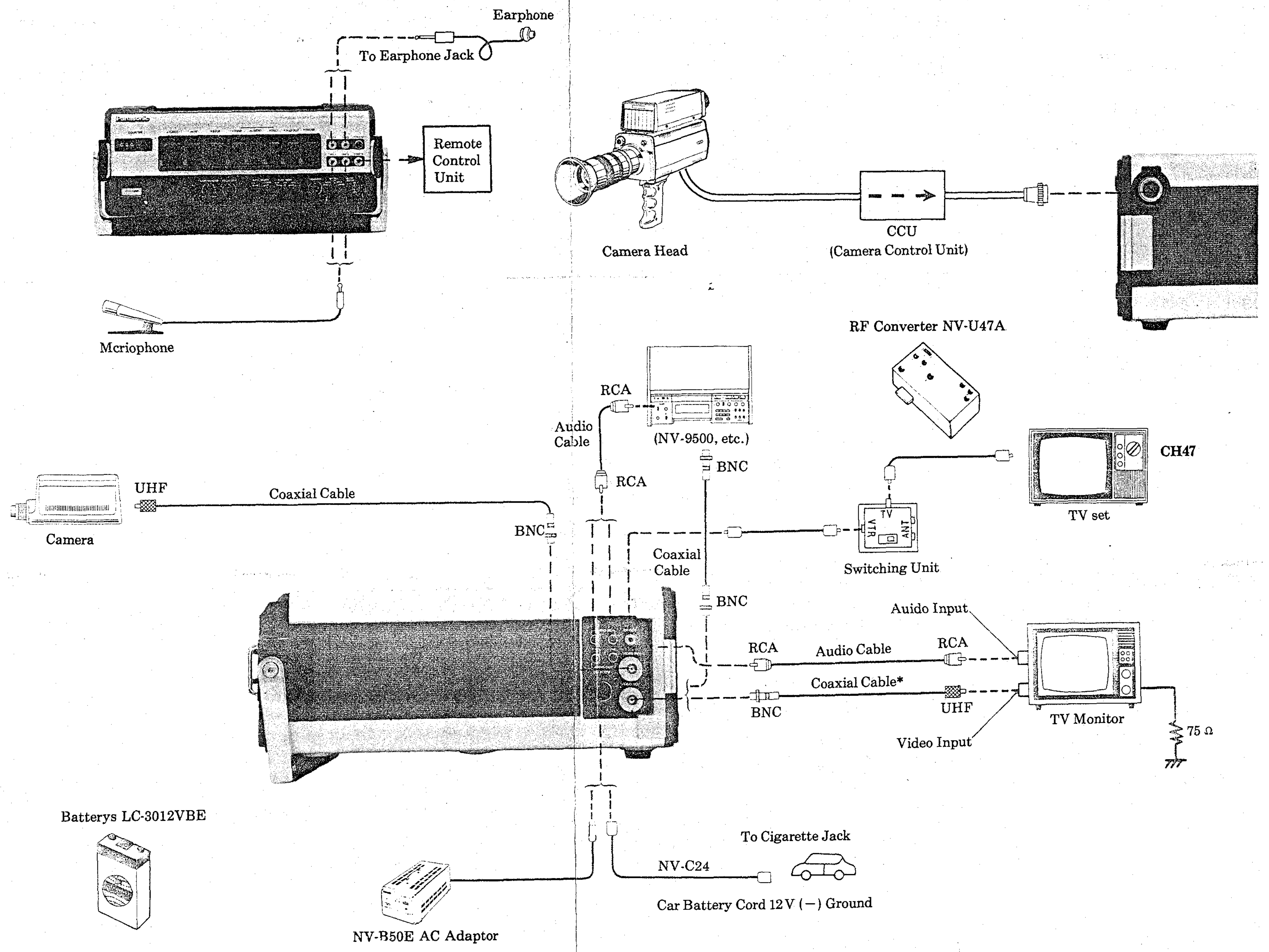
㉚ **Audio Output Jacks (AUDIO OUT)**

CH-1: Audio CH-1 output signal appears during the record/playback and audio dubbing modes.

CH-2: Audio CH-2 output signal appears during the record mode.

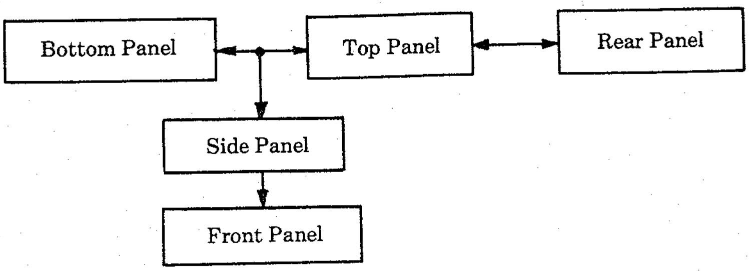
Audio CH-1 only, Audio CH-2 only or both Audio CH-1/CH-2 playback signals appear during the playback mode (as selected by the Audio Monitor Control ㉒).

GENERAL CONNECTION & APPLICATIONS


Earphone
To Earphone Jack
Remote Control Unit
Mcriophone
Camera Head
CCU
(Camera Control Unit)
RF Converter NV-U47A
RCA
Audio Cable
(NV-9500, etc.)
BNC
RCA
CH47
TV set
UHF
Coaxial Cable
Camera
BNC
Coaxial Cable
Switching Unit
TV
VTR
ANT
BNC
Auido Input
RCA
Audio Cable
RCA
Coaxial Cable*
BNC
UHF
TV Monitor
Video Input
75 Ω
Batterys LC-3012VBE
To Cigarette Jack
NV-C24
Car Battery Cord 12 V (−) Ground
NV-B50E AC Adaptor

DISASSEMBLY METHOD

GENERAL


Bottom Panel
Top Panel
Rear Panel
Side Panel
Front Panel

1. REMOVAL OF THE TOP PANEL

Unscrew the 7 screws (A).

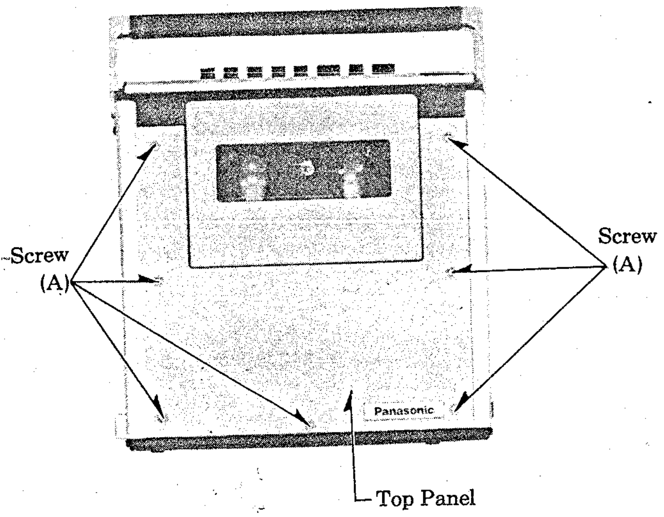

Screw (A)
Screw (A)
Panasonic
Top Panel

Fig. 1

2. REMOVAL OF THE BOTTOM PANEL

Unscrew the 7 screws (B) and also remove the RF cover.

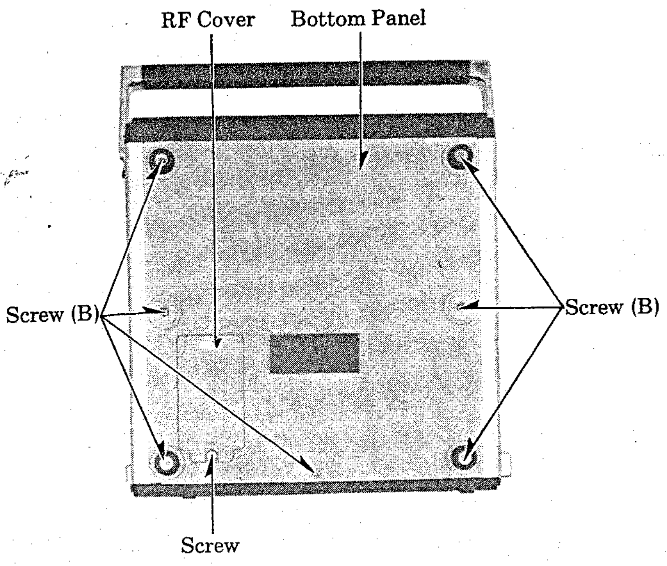

RF Cover
Bottom Panel
Screw (B)
Screw (B)
Screw

Fig. 2

3. REMOVAL OF THE REAR PANEL

Loosen the screw (C) and remove the Battery Case Cover.
Unscrew the 4 screws (D).

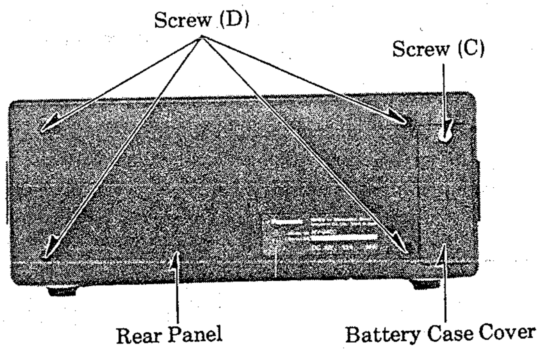

Screw (D)
Screw (C)
Rear Panel
Battery Case Cover

Fig. 3

4. REMOVAL OF THE SIDE PANEL

Unscrew the 12 screws (E) securing the both side panel to the frame.

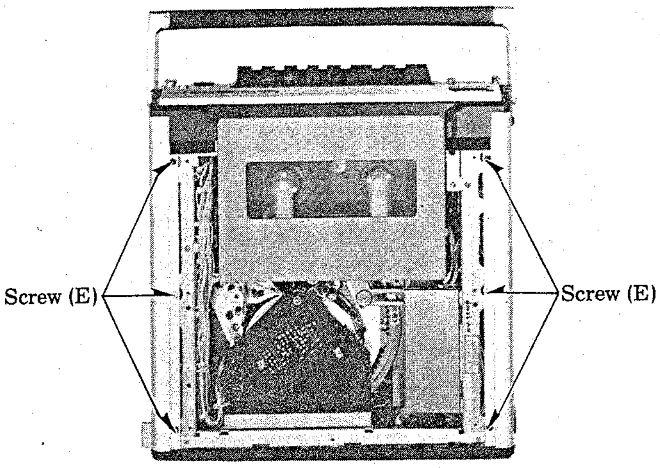

Screw (E)
Screw (E)

Fig. 4

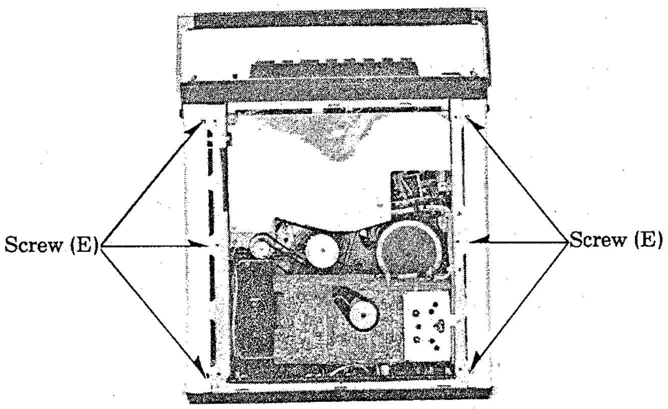

Screw (E)
Screw (E)

Fig. 5

5. REMOVAL OF THE CASSETTE COMPARTMENT COVER

Unscrew the 4 screws (F).

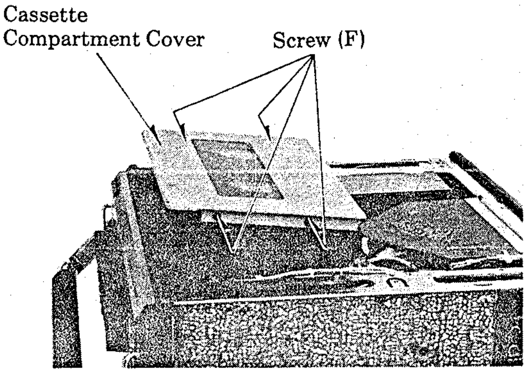

Cassette
Compartment Cover
Screw (F)

Fig. 6

6. REMOVAL OF THE CASSETTE COMPARTMENT BASE

Unscrew the 4 screws (G).

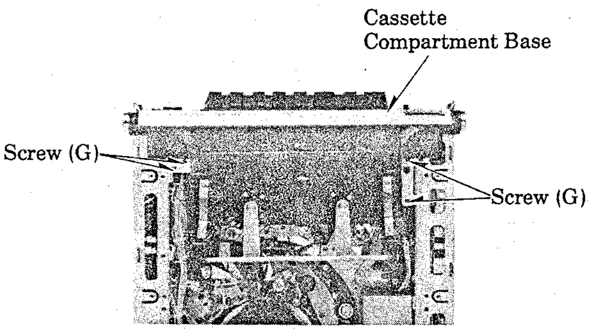

Cassette
Compartment Base
Screw (G)
Screw (G)

Fig. 7

7. REMOVAL OF THE FRONT PANEL

Remove the 4 knobs for AUDIO BALANCE, COLOUR LOCK, TRACKING and METER by gently pulling them outward. Unscrew the screw (H) on the top of the front panel, then press the lock levers securing both sides into the inside direction.

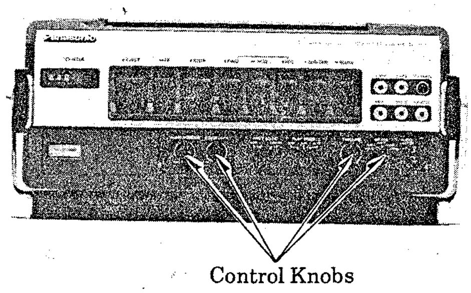

Control Knobs

Fig. 8

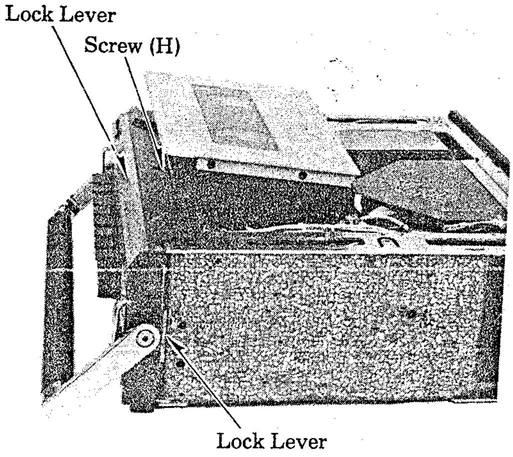

Lock Lever
Screw (H)
Lock Lever

Fig. 9

REMOVAL OF CIRCUIT BOARDS

1. LAYOUT OF CIRCUIT BOARDS

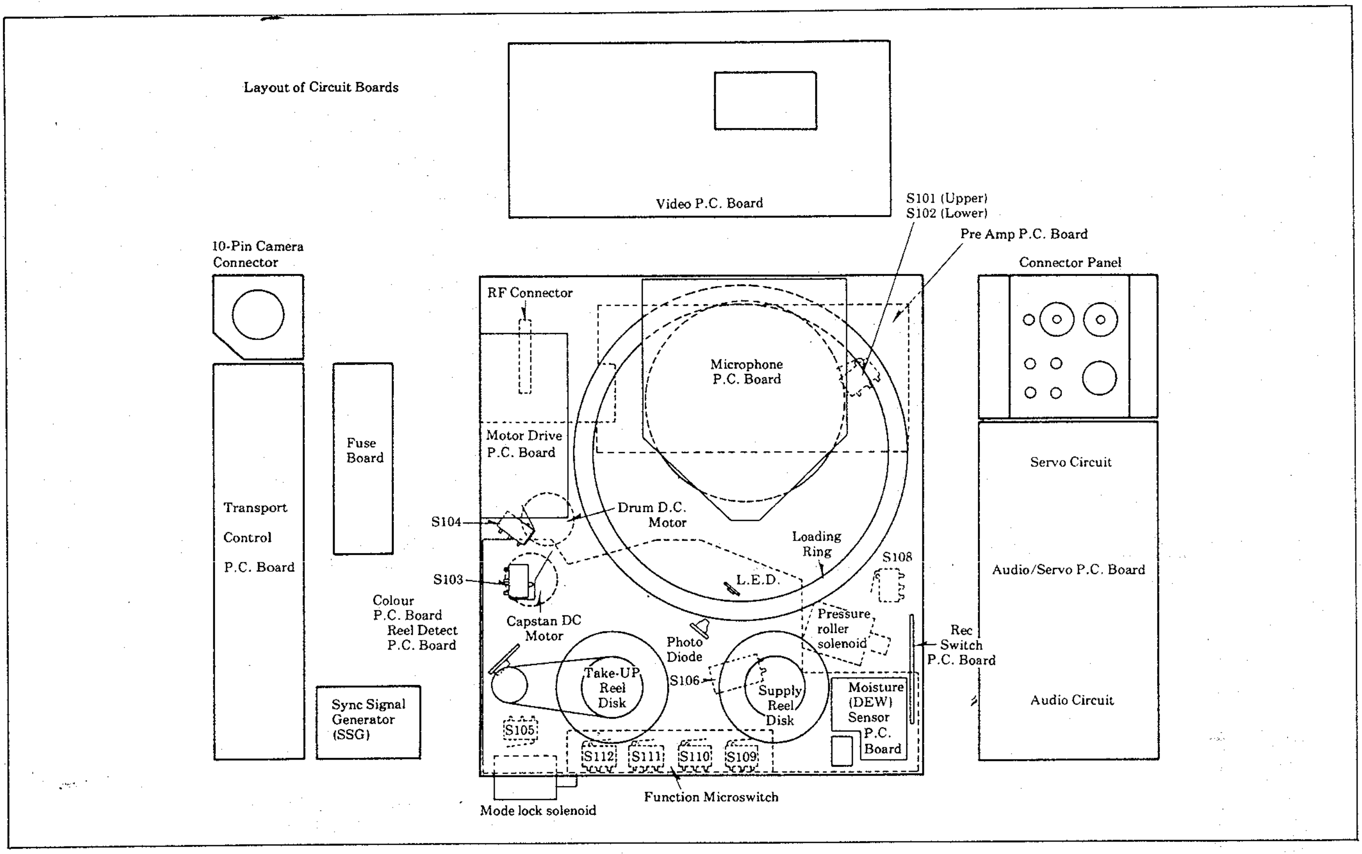

Layout of Circuit Boards
Video P.C. Board
S101 (Upper)
S102 (Lower)
Pre Amp P.C. Board
Connector Panel
10-Pin Camera Connector
RF Connector
Microphone P.C. Board
Motor Drive P.C. Board
Fuse Board
Transport Control P.C. Board
Servo Circuit
S104
Drum D.C. Motor
Loading Ring
S108
S103
L.E.D.
Audio/Servo P.C. Board
Colour P.C. Board
Reel Detect P.C. Board
Capstan DC Motor
Pressure roller solenoid
Rec Switch P.C. Board
Photo Diode
Take-UP Reel Disk
S106
Supply Reel Disk
Moisture (DEW) Sensor P.C. Board
Audio Circuit
Sync Signal Generator (SSG)
S105
S112
S111
S110
S109
Function Microswitch
Mode lock solenoid

Fig. 10

2. REMOVAL OF THE AUDIO & SERVO BOARD

a) Unscrew the 3 screws (A) and remove the shield sheet and the board, gently pulling tabs (B) of chassis slots (see Fig. 11).

b) And then, disconnect all connectors.

Note: When mounting the Audio & Servo and other circuit boards, be sure to connect the correspondingly numbered connectors to the connector pins on the board as shown in Fig. 12.
Also when mounting the Audio & Servo circuit board to the chassis, make sure that the 2 slide switch activating levers (C), located near the forward corner of the chassis, are manually positioned fully toward the front of the chassis.
Take care not to pinch the wires when mounting.

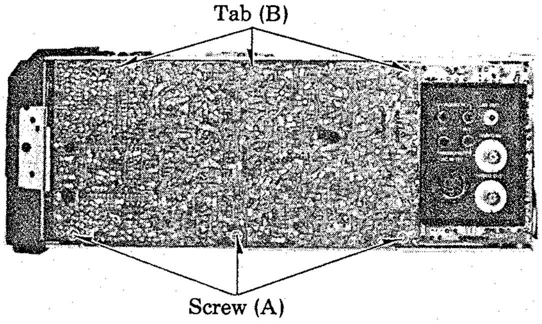

Tab (B)
Screw (A)

Fig. 11

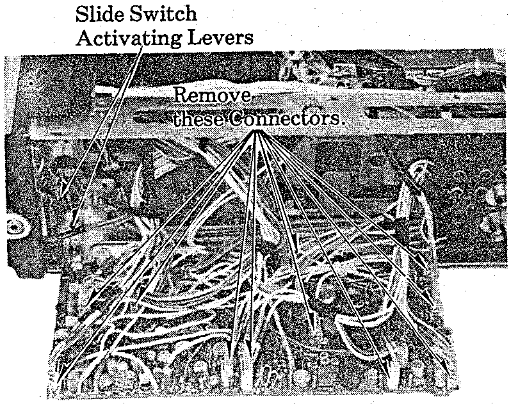

Slide Switch Activating Levers
Remove these Connectors

Fig. 12

3. REMOVAL OF THE MECHANISM CONTROL BOARD

a) Unscrew the screw (A) as shown in Fig. 13.
Note that this screw also holds a ground wire.
b) Remove this circuit board by ensuring that tabs (B) are out of chassis slots and then gently pulling outward.
c) Disconnect the connector from the board.
d) When mounting, be sure to replace ground wire and also take care not to pinch the other wires.

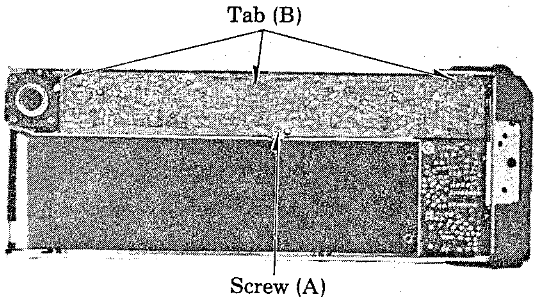


Fig. 13

4. REMOVAL OF THE VIDEO AMPLIFIER BOARD

a) Unscrew the 3 screws (A) as shown in Fig. 14
b) Remove the shield sheet and the circuit board, gently pulling tabs (B) out of chassis slots and then, disconnect all numbered connectors.

Note: When mounting the Video Amplifier circuit board, be careful not to let the wires (C) touch the loading ring, since they may come into contact with the mechanism and be damaged.

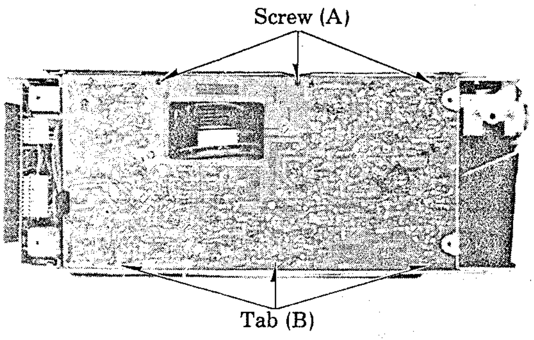


Fig. 14

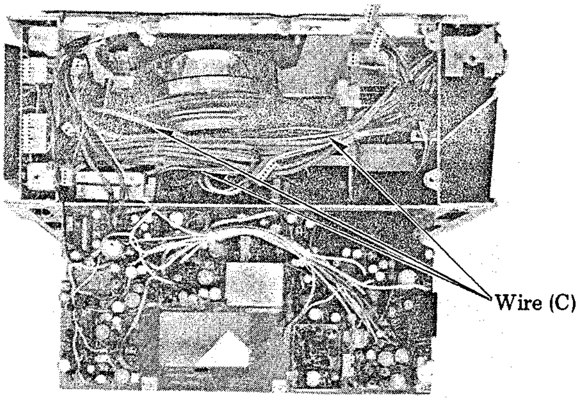


Fig. 15

5. REMOVAL OF THE COLOUR AMPLIFIER BOARD

a) Unscrew the 5 screws (A) on the Colour Amplifier circuit board, remove the shield sheet and the board.
b) Disconnect the all numbered connectors on the board.

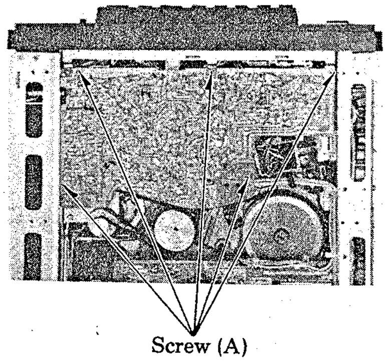


Fig. 16

6. REMOVAL OF THE PRE-AMPLIFIER BOARD

a) Unscrew the 2 screws (A) from the Pre-Amplifier circuit board and remove the 3 wire clamps as shown in Fig. 17.
b) Remove the shield case by using solder iron.
c) Unsolder the 2 wires (B) located inside of the shield case.

Note: When mounting the Pre-Amplifier circuit board, fasten the wires by using wire clamps in the same position.

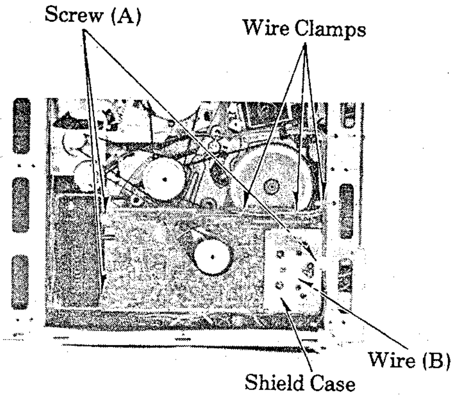


Fig. 17

7. REMOVAL OF THE MICROPHONE AMPLIFIER BOARD

a) Remove the screw as shown in Fig. 18.
b) Lift up the hinged board, in the direction of arrow on Fig. 18.

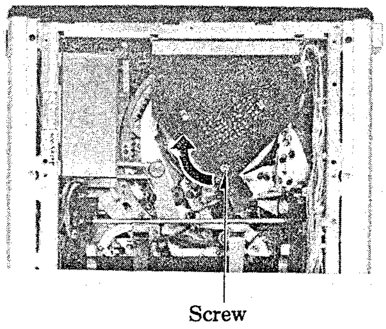


Fig. 18

8. REMOVAL OF THE MOTOR DRIVER AMPLIFIER (MDA) BOARD

a) Unscrew the 2 screws (A) on the case of the MDA circuit board.
b) Pull the MDA circuit board from its metal shield box.
c) Disconnect the numbered connectors from the board.

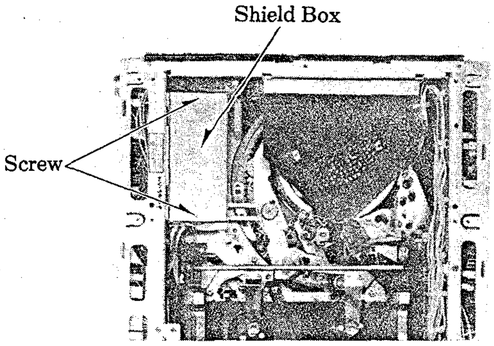


Fig. 19

9. REMOVAL OF THE FUSE BOARD

a) Remove the Mechanism Control board as following section 3.
b) Unscrew the 2 screws (A) on the Fuse board located beneath the Mechanism Control board as shown in Fig. 20.
c) Take off the Fuse board by gently pulling outward.

Note: When mounting the Fuse board to the chassis, do not trap the wires between the circuit board and chassis.

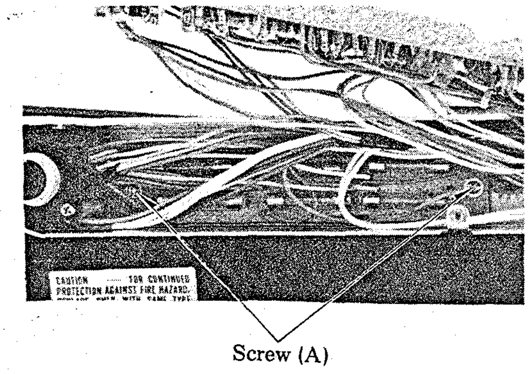


Fig. 20

10. REMOVAL OF THE SYNC SIGNAL GENERATOR (SSG) BOARD

a) Unscrew the screw on the SSG board as shown in Fig. 21.
b) Remove the SSG circuit board by gently pulling the forward.
c) Disconnect the numbered connector on the circuit board.

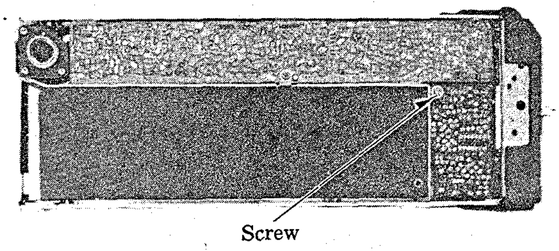


Fig. 21

11. REL OVAL OF THE MONISTURE (DEW) BOARD

a) Unscrew the screw on the Moisture (DEW) Sensor board.
b) Disconnect the numbered connectors on the board.
c) Remove the Moisture (DEW) Sensor board by gently pulling outward.

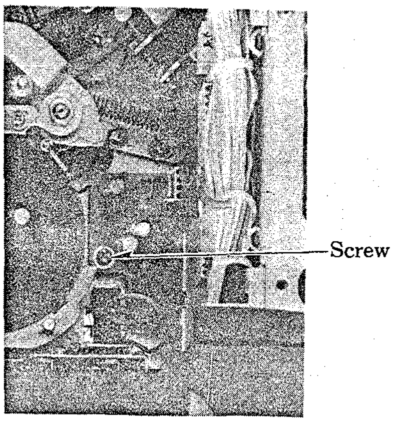


Fig. 22

MECHANICAL MAINTENANCE PROCEDURES

1. VIDEO HEAD (UPPER DRUM ASSY) REPLACEMENT

Note: Replacement of the video heads may, in time, become necessary because of wear or damage.
The video heads are replaced by exchanging the upper drum assy. This means the upper cylinder and two video heads must always be treated as an integral unit. Since the unit may be precisely assembled only at the factory, field repair is impossible.

Replacement Procedure

1. Remove the Top Panel.
2. Unscrew the screw securing the MIC AMP circuit board, lift up the MIC AMP circuit board.
3. Unsolder the 4 lead wires connected to the video head.
4. Hold the side of upper drum with hand so that it will not rotate.
5. Unscrew the 2 large screws (A) and remove the two wire clamps.
6. When removing the upper drum unit, hold upper part of it with both hands and pull it out straight upward to prevent the video heads from touching the posts or A/C head, erase head etc.
7. Clean the side and bottom of the new upper drum with a soft cloth dampened in alcohol or liquid freon.

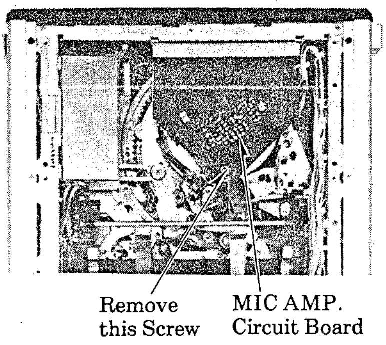


Fig. 1

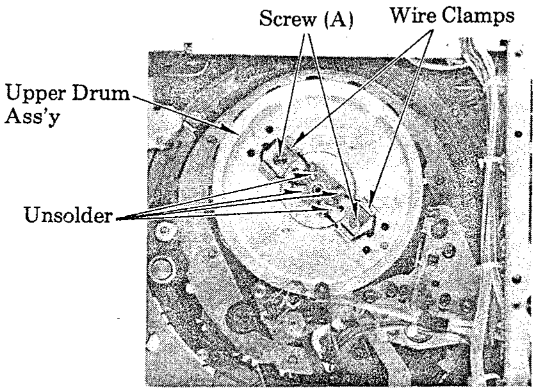


Fig. 2

8. Place the new upper drum assy on the head disc base so that the screw holes match.
9. Install the wire clamps.
10. Solder the lead wires of the video heads.
11. Install the MIC AMP circuit board.

Note: The upper drum assembly is extremely important and must be handled with utmost care. Striking or dropping the upper drum may cause severe damage and render the assembly non-functional.

2. DRUM ASS'Y REPLACEMENT/ADJUSTMENT

A. Replacement Procedure

1. Remove the Top Panel and the Bottom Panel. Also remove the cassette cover and the cassette compartment base unit.
2. Unscrew the 3 screws (A) securing the Pre-amp circuit circuit board.
   Remove the connectors from the circuit board. (P33, P34 P35, P36, P80).

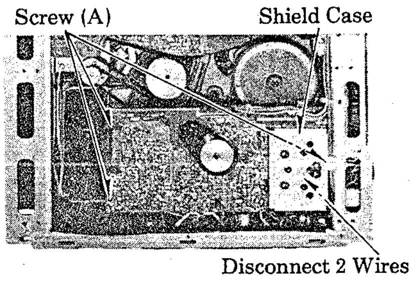


Fig. 3

3. Remove the shield case from the Pre-amp circuit board. Unsolder the 2 lead wires connected to this board from the relay board of the drum ass'y.
4. Unscrew the 4 screws (B) securing the A/C head ass'y. Unscrew the screw securing the reinforcing angle from the bottom side.

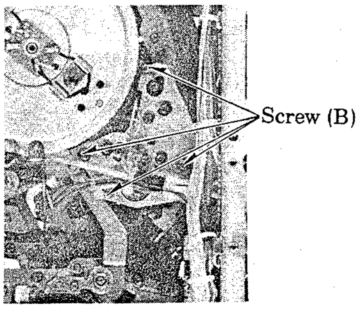


Fig. 4

5. Unsolder the lead wires from the erase head terminal. Unscrew the 2 screws (C) securing the L.E.D mounting angle.
6. Unscrew the 3 screws securing the drum ass'y.

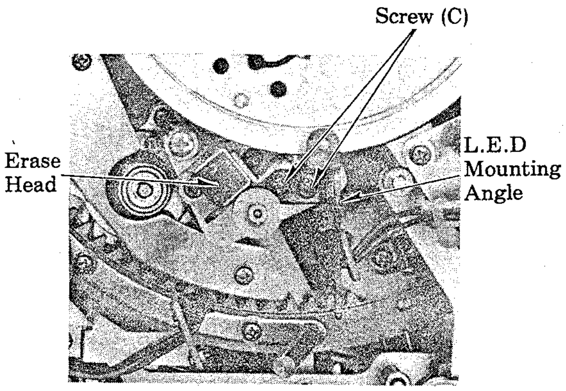


Fig. 5

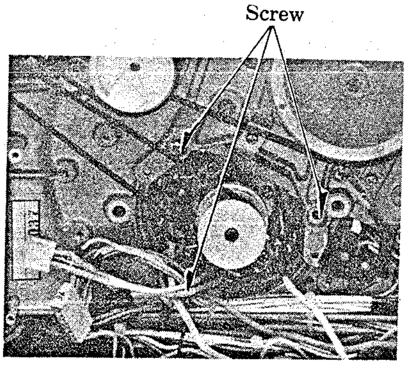


Fig. 6

7. Install the new drum ass'y, and reverse the above steps to complete the installation.
8. Notes on assembly:
   a) Wipe and clean the mounting surface of the drum assy and the chassis before assembling.
   b) After assembly, wipe and clean the tape contacting portion of the drum assy with a soft cloth.
   c) Also clean the video heads with the head cleaner (VFK27).

B. Adjustment Procedure

When the drum assy is replaced, tape interchangeability should be checked.
See "TAPE INTERCHANGEABILITY ADJUSTMENT".

3. AUDIO/CONTROL HEAD REPLACEMENT/ADJUSTMENT

A. Replacement Procedure

1. Unscrew the 2 small screws (A) and remove the brush assy as shown in Fig. 11.
2. Unscrew the 4 screws (B).
3. Unsolder the Mini board located behind the audio/control head assy.
4. Unscrew the 3 screws (C) and remove the audio/control head unit from the head base.
   Be careful not to lose the spring when removing audio/control head unit.
5. Then unscrew the 3 screws (D) and remove the audio/control head from the head plate.

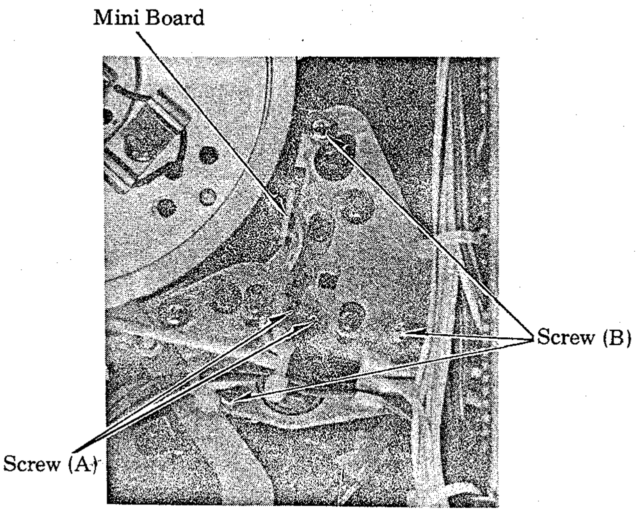


Fig. 7

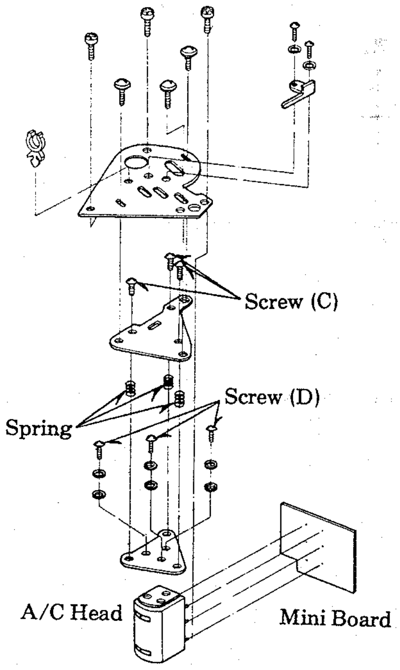


Fig. 8

B. Checking before adjustment

Before adjustment, check the tape travel between the nearby guide and A/C head and between the A/C head and the capstan shaft with a spare cassette tape. The tape should be traveled smoothly without wrinkling or creasing.

Note: Do not use the alignment tape for checking the tape travel before smooth traveling is assured.
Otherwise, it may be damaged.

If the tape is distorted between the guide post and A/C head, satisfactory pictures can not be obtained.
Therefore, make sure that the tape does not ride on the edge of the guide post and that the tape is not creased.
If unsatisfactory tape travel is found, by the above check, adjust the 2 screws (A) and (B) to normalize tape transportation by turning in small increments.
Note: Do not adjust the guide post.

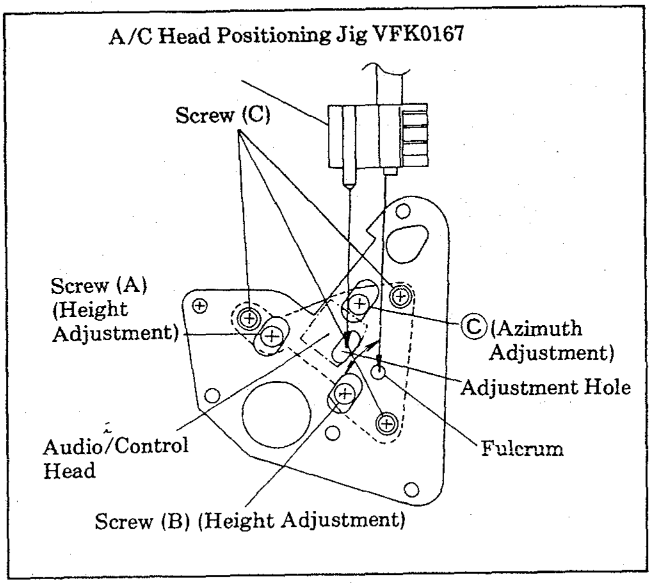

A/C Head Positioning Jig VFK0167
Screw (C)
Screw (A) (Height Adjustment)
Ⓒ (Azimuth Adjustment)
Adjustment Hole
Audio/Control Head
Fulcrum
Screw (B) (Height Adjustment)

Fig. 9

C. Adjustment Procedure

1. *Audio/Control Head Height Adjustment*
   a) Set the unit to play mode and check that the core of the core of the head extends 0.5mm above the edges of the tape as shown in Fig. 10.
   b) If not, adjust the height adjustment screws (A) and (B).
2. *Tape Travel Adjustment*
   a) Connect the oscilloscope to TP8 on the Video Amplifier circuit board.
   b) Playback the alignment tape to reproduce the monscope section.
   c) Check that the FM waveform on the oscilloscope, if any waveform variation appears on the waveform, the following adjustment is necessary.
   d) Waveform variation appears when touching the upper side of the video tape gently by hand, between the guide pole and drum output.
   In this case, the waveform on TP8 will be shown as Fig. 11.
   Loosen screw (B) slightly or fasten screw (A) slightly.

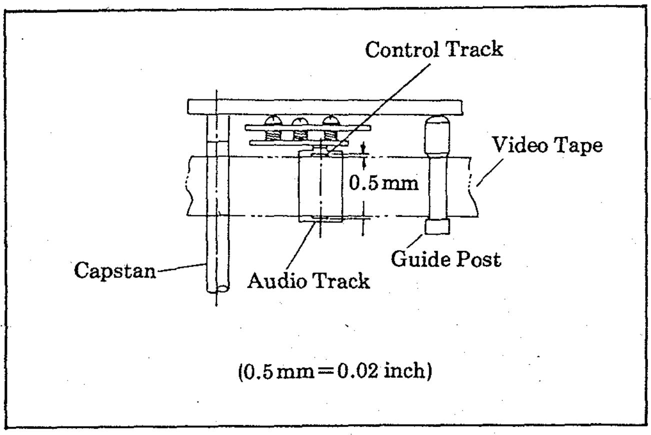
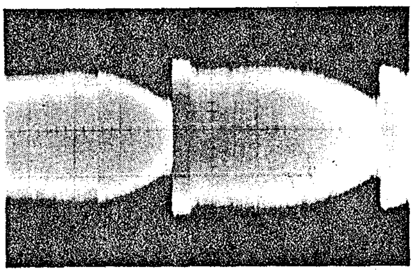

Control Track
Video Tape
0.5mm
Capstan
Audio Track
Guide Post
(0.5mm=0.02 inch)

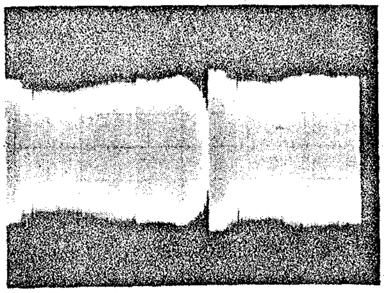
Fig. 10



Tape travel is incorrect (C 2 d)

Fig. 11

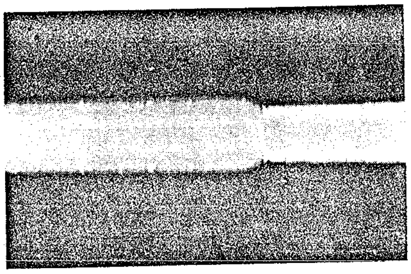
   e) Waveform variation appears when touching the lower side of the video tape gently by hand, between the guide pole and audio/control head.
   In this case, the waveform on TP8 will be shown as Fig. 12.
   Loosen screw (A) slightly or fasten screw (B) slightly.



Tape travel is incorrect (C 2 e)

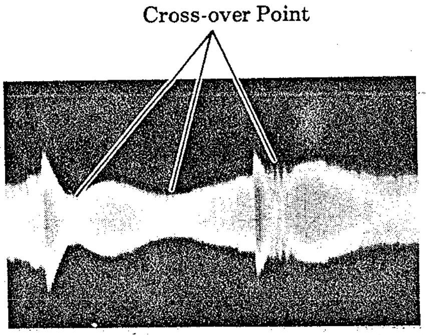
Fig. 12

f) After above adjustment, check the FM waveform by slightly turning the tracking control while watching the waveform.
There should be no corss-over point on the waveform at the minimum FM output as shown in Fig. 13 if the tape travel is correct. If there is a cross-over on the waveform as shown in Fig. 14, repeat the above adjustment.
Then connect the oscilloscope to TP9 on the servo circuit of the Audio & Servo Amplifier. Check the positive portion of control pulse level for 4mVp-p or more.



At tracking minimum (correct waveform)

Fig. 13



At Tracking minimum (incorrect waveform)

Fig. 14

3. *Azimuth Adjustment*
   a) Connect the oscilloscope to TP9 (CH1 OUT) on the audio amplifier of the Audio & Servo circuit board.
   b) Playback the alignment tape to reproduce the 10kHz audio signal section.
   c) Adjust the screw (G) for the playback signal at TP9 to be maximum.
   d) Now, connect the oscilloscope to TP9 (CTL PULSE) on the servo circuit of the Audio & Servo circuit board.
   e) Check the control pulse level on TP9, the positive pulse level on TP9 should be 5mVp-p or more.
   If not, adjust Step 2 "Tape Travel Adjustment" again.
4. *Audio/Control Head Adjustment*
   a) Connect the oscilloscope to TP8 (FM OUT) on the Video Amplifier circuit board.
   b) Playback the alignment to reproduce the monoscope signal section.
   c) For this adjustment, keep the TRACKING control knob in the center position.
   d) Before adjustment, loosen the 3 screws (C) as shown in Fig. 9. Then adjust for maximum FM output on TP8 by slightly moving the audio/control head assy to the right and left as shown by arrow direction by using an audio/control head positioning jig (VFK0167) in adjustment hole as shown in Fig. 9.
   e) After obtaining the maximum FM output level, tighten the 3 screws (C).
   f) The preceding steps provide for complete adjustment of the audio/control head assy.
   Finally, by recording and playing back the video, confirm that the playback picture is normal.
   Again, as a final check, playback to reproduce the monoscope signal section from the alignment tape.

4. ERASE HEAD REPLACEMENT

1. Unsolder the lead wires from the erase head.
2. Unscrew the 2 screws (A) and remove the erase head unit.
3. Unscrew the 2 screws (B) and remove the erase head from the angle.

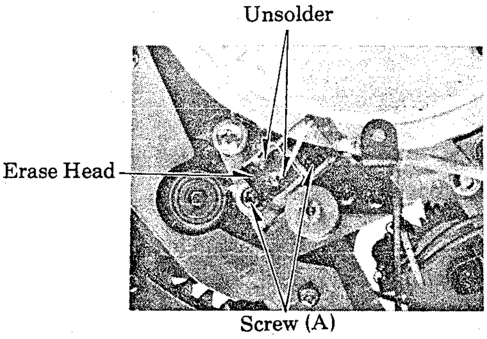


Fig. 15

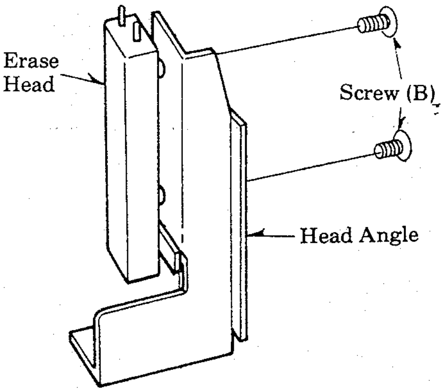


Fig. 16

5. PRESSURE ROLLER ASSY REPLACEMENT/ ADJUSTMENT

A. Replacement Procedure

1. Hold the FWD mode by hand without power on.
2. Turn the flywheel counterclock wise by hand until the pressure roller poition goes near the rear panel section as shown in Fig. 17. After that, release the FWD key.
3. Remove the pressure roller from the guide and lift up the pressure roller ass'y.
   Then remove the spring from the pressure roller arm.

4. Unscrew the screw (A) and remove the pressure roller unit.
5. When installing the pressure roller unit to the original position, be care not to mis-set the shaft position (See Fig. 18).
6. Install the pressure roller assy to the original position.
7. After installation, turn the flywheel counterclockwise so the loading gear turns counterclockwise, retarning to the beginning position.

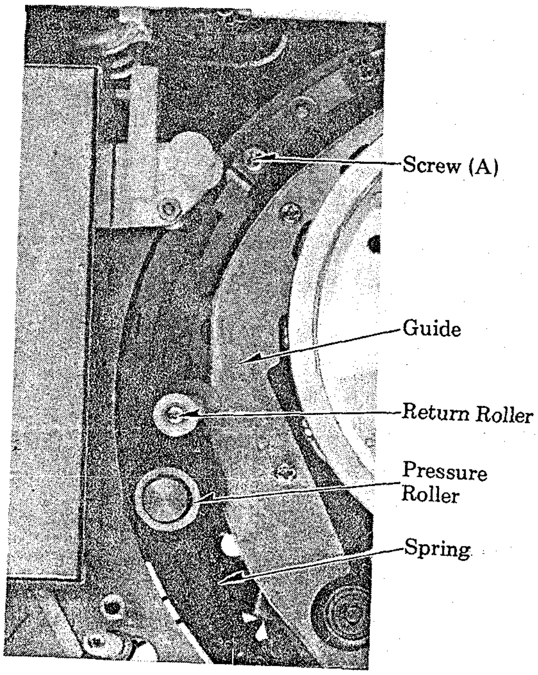

Screw (A)
Guide
Return Roller
Pressure Roller
Spring

Fig. 17

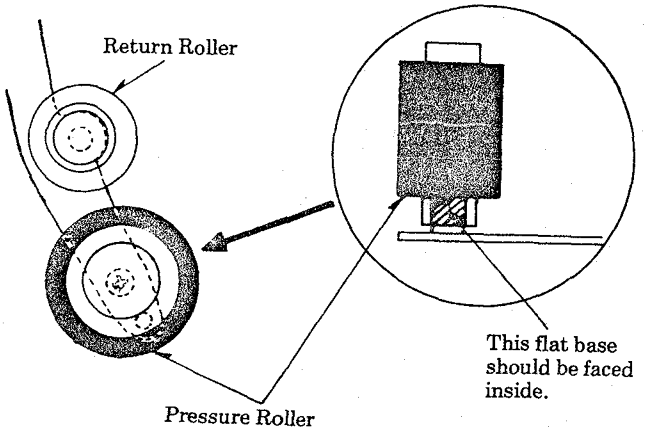

Return Roller
This flat base should be faced inside.
Pressure Roller

Fig. 18

B. **Adjustment Procedure**

Make sure that correct tape travel is obtained in loading and unloading, and also that tape travel smoothly with no wrinkles evident between the audio/control head and capstan shaft. If the tape travel is incorrect during the PLAY (FWD), mode the following adjustment is necessary (refer to the following illustrations).

1. Loosen the 2 screws (B) a few turns only on the loading ring assy.
2. Place the unit in the REC mode without a cassette tape.
   Note: When operating the unit in the REC mode without a cassette tape, push the REC prohibition lever. Also, light from the L.E.D should be excluded by covering the photo-diode.
3. Fasten the 2 screws (B) during the REC mode. Then, press the pause key to place the unit in PAUSE mode.
4. Check for parallelism between the capstan shaft and the pressure roller lever toward the capstan shaft in the direction indicated by the arrow.
5. After adjustment, recheck the tape travel.

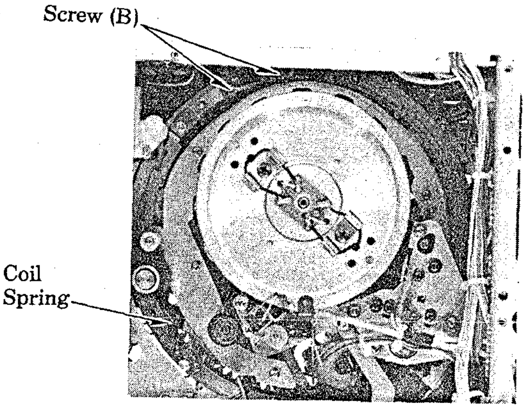

Screw (B)
Coil Spring

Fig. 19

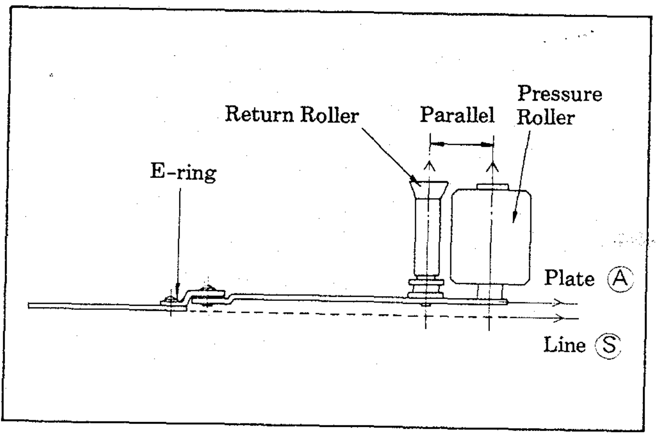

Return Roller
Parallel
Pressure Roller
E-ring
Plate Ⓐ
Line Ⓢ

Fig. 20

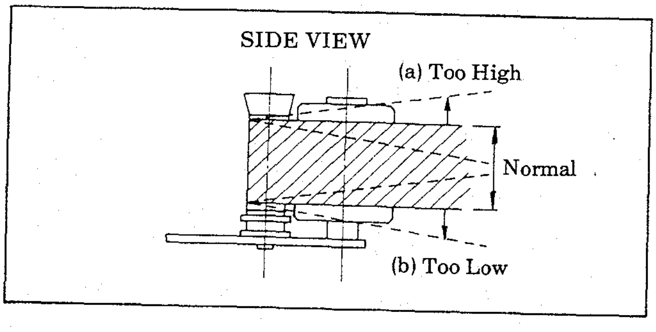

SIDE VIEW
(a) Too High
Normal
(b) Too Low

Fig. 20-a

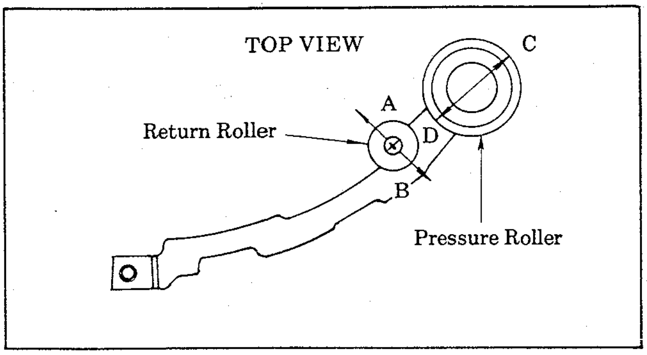

TOP VIEW
C
A
Return Roller
D
B
Pressure Roller

Fig. 20-b

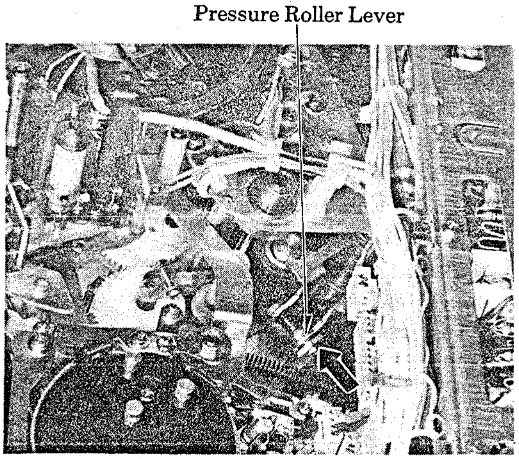

Pressure Roller Lever

Fig. 21

6. REEL DISK REPLACEMENT/ADJUSTMENT

A-1. Supply Reel Disk Replacement

1. Remove the Top Panel and the Cassette Cover, the Cassette Compartment unit.
2. Unscrew the screw (A) and take off it straight-up.
3. When taking off this reel disk, be careful not to bend the back tension band.
4. Install the new one white pressing the F.F key, to keep the rewind idler and brake shoe should separate from the reel disk.

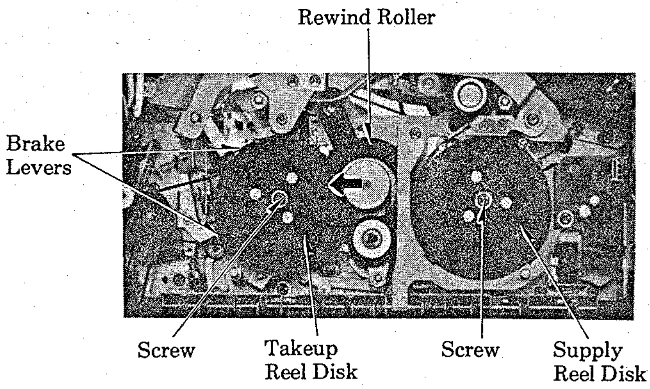

Rewind Roller
Brake Levers
Screw
Takeup Reel Disk
Screw
Supply Reel Disk

Fig. 22

A-2. Takeup Reel Disk Replacement

1. Unscrew the screw located at the center of the top the takeup and supply reel disk as shown in Fig. 23.
2. Remove the supply reel disk by pushing the F.F key, then remove the takeup reel disk by pushing the REW key. Be careful not to lose the polyslider washers under the reel disk.
3. When pushing the REW key, install the new takeup reel disk.
   Then, install the supply disk while pushing the F.F. key.

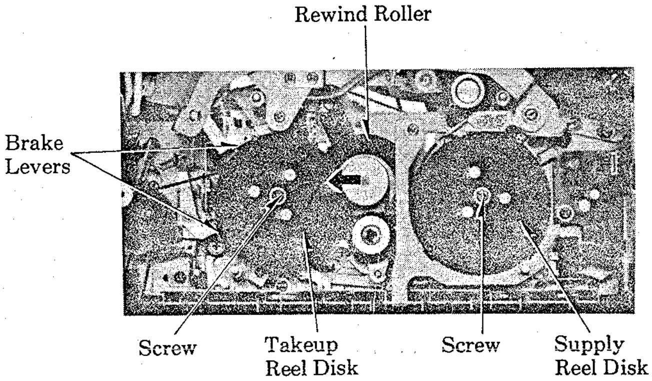
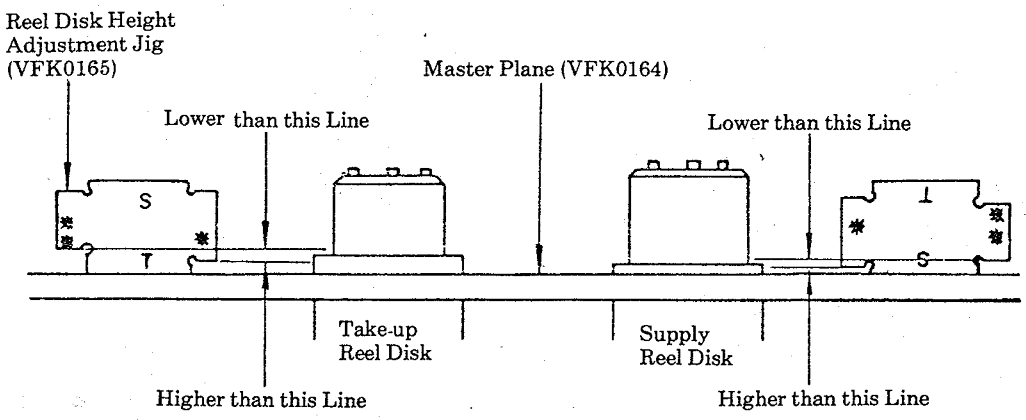

Rewind Roller
Brake Levers
Screw
Takeup Reel Disk
Screw
Supply Reel Disk

Fig. 23

B. Adjustment Procedure

After replacing the reel disks, check the reel height and take-up torque.

1. *Reel Height*
   a) For this adjustment, the cassette compartment unit must be removed. Set the master plane (VFK0164) on the cassette holding post and put the master block on this plane.
   b) There are two marks of "S" and "T" on the master block.
   "S" means the supply reel disk.
   "T" means the takeup reel disk.
   To measure the supply side, the height jig must have the "S" side on the plane.
   To measure the takeup side, master block have to be put "T" side on the plane.
   c) Check to ensure that the reel disk height is higher than the single-asterisked edge of the block and lower than the double-asterisked edge, as shown in Fig. 24.
   d) To adjust the height, add or remove one or more washers.
   Washers are made in two thickness as shown in Fig. 24.
   After the height adjustment, lubricate the reel disk shaft.



Washers for height adjustment: VMA3173......0.13mm (0.005″)
Part numbers of washers VMA3174......0.50mm (0.02″)

Fig. 24

2. *Takeup Torque*
   a) Check the REW torque by holding the torque meter (VFK69) in contact with the top of reel disk spindle, and press the REW key, while holding the meter's fluted surface between your thumb and fingers.
   (For the rewind torque measurement, light should be kept from the LEDS-1 and 2 by covering them, otherwise the unit will go to the stop mode.)
   Gradually loosen your grip on the torque meter, and read the appropriate meter scale, while the torque meter is slowly slipping in your hand.
   A proper rewind torque is between 350 and 450g-cm.
   If REW torque is incorrect, adjust the pressure of the reel clutch by adding or taking off washers.

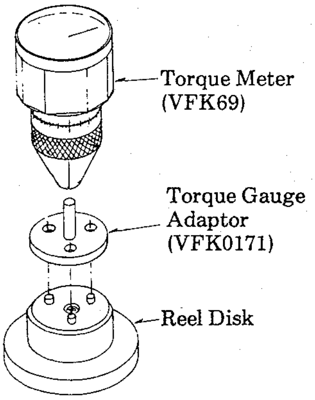


Fig. 25

   b) Check the takeup torque by attaching the torque meter to the takeup reel disk, and press the PLAY key, while keeping the torque meter in your hand. A proper takeup torque is between 130 and 170g-cm.
   For torque measurement, light should be kept from the photo-diode by covering it. Also, disconnect P8 on the mechanism control circuit board; if not, the unit will go to stop mode.
   c) Then check the F.F. torque by holding the torque meter in contact with the top of the takeup reel disk spindle, and press the F.F. key, while holding the meter's fluted surface between your thumb and fingers.
   Gradually loosen your grip on the torque meter, and read the appropriate meter scale, while the torque meter is slowly slipping in your hand.
   A proper F.F. torque is more than 300g-cm.
   If F.F. torque is incorrect, adjust it by replacing the takeup reel disk or F.F. idler or F.F. belt.

7. REWIND IDLER REPLACEMENT

1. Remove the Color Amplifier circuit board. (Remove the connectors of P38, 39, 41, 43).
2. Remove the supply & takeup reel disks.
   Be careful to avoid bendingthe back tension band and take care not to lose any of the polyslider washers under the reel disks.
3. Unscrew the screw (A) and snap ring (B) and then, remove the tension band guide.
4. Unscrew the screw and remove the harness clamp (C), then remove the guide plate.
5. Loosen the setscrew (D) by the hex wrench (VFK76) and remove the F.F. idler.
6. Then, loosen the setscrew (E) by the hex wrench (VFK76) and remove the rewind idler pulling out the idler pulley.
7. When removing the F.F. idler pulley and rewind idler from the shaft, hold the idler pulley by hand.
8. Install the new rewind idler by following removal steps 1-7 above in reverse order.
   Note: When tightening the setscrew, be sure to make a contact with the flat portion of the shaft.
9. After replacement, check the following.
   a) F.F. torque, Takeup torque.
   b) REW torque.

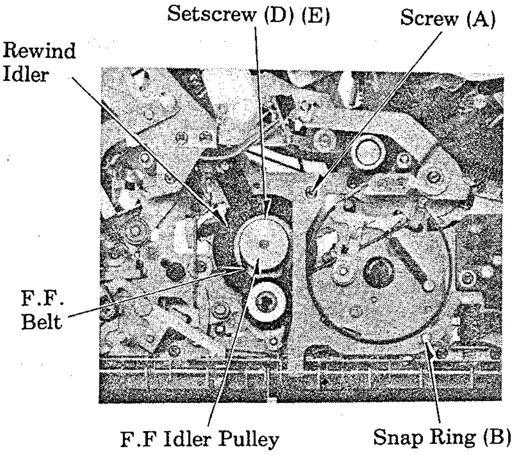

Setscrew (D) (E)
Screw (A)
Rewind Idler
F.F. Belt
F.F Idler Pulley
Snap Ring (B)

Fig. 26

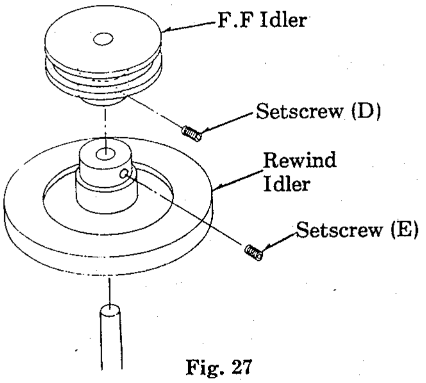

F.F Idler
Setscrew (D)
Rewind Idler
Setscrew (E)

Fig. 27

8. BACK TENSION ADJUSTMENT

When the supply reel disk or brake band has been replaced, the back tension must be adjusted as follows.

1. Operate the equipment for play mode without a cassette tape.
2. After pressure roller pressed to the capstan shaft, check the following.
3. Using the master plane jig, lightly move the tension post to direction indicated by the arrow by hand.

   When the tension pole reaches the master plane jig at the point (C) as shown in Fig. 28, the plate (E) comes contact with the tension arm assy at the point (D).

   If not, otherwise the plate (E) comes contact with the tension arm assy before the tension post reached to the master plane jig.

   Adjust the position of plate (E) by using the two screws (A), the adjust position of the tension band as shown in Fig. 28.

   Also, check the heightand parallel of the tension post compared to the guide roller as shown in Fig. 28.
4. Measure the back tension by setting the measurement cassette* as shown in Fig. 29 on the sub-chassis, and set the dummy reel on the supply reel disk, and reading a tension gauge as shown in Fig. 30.

   The measured back tension should be 80g-cm ± 10g-cm.
5. Back tension can be adjusted by the loosening screw (B) shown in Fig. 28 and moving the plate to arrow (a) or (b).

   Moving the plate to arrow (a) decreases the back tension, and moving the plate to arrow (b) increases the back tension.

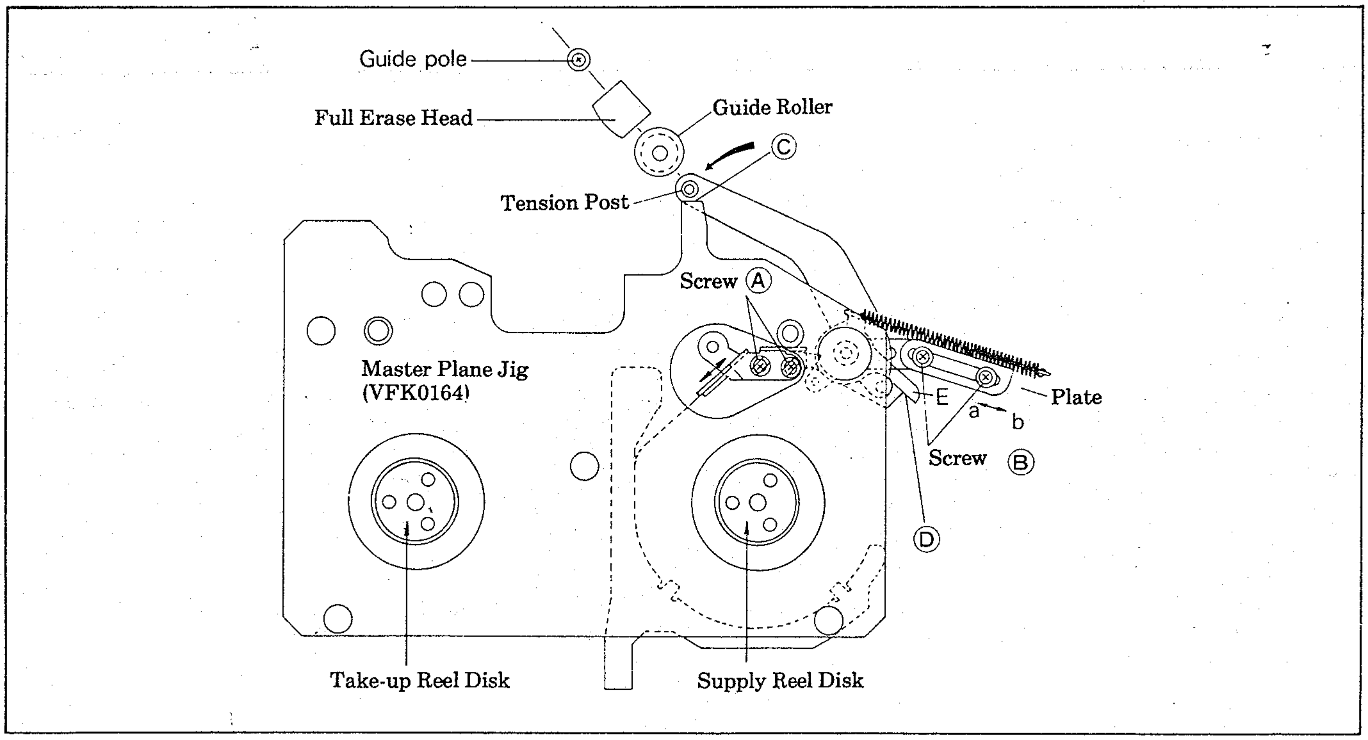
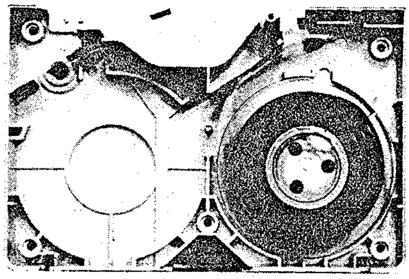

Guide pole
Full Erase Head
Guide Roller
Ⓒ
Tension Post
Screw Ⓐ
Master Plane Jig
(VFK0164)
E
a
b
Plate
Screw Ⓑ
Ⓓ
Take-up Reel Disk
Supply Reel Disk

Fig. 28



* The measure ment cassette is regular NV-P22S with no top cover and no takeup reel.

Fig. 29

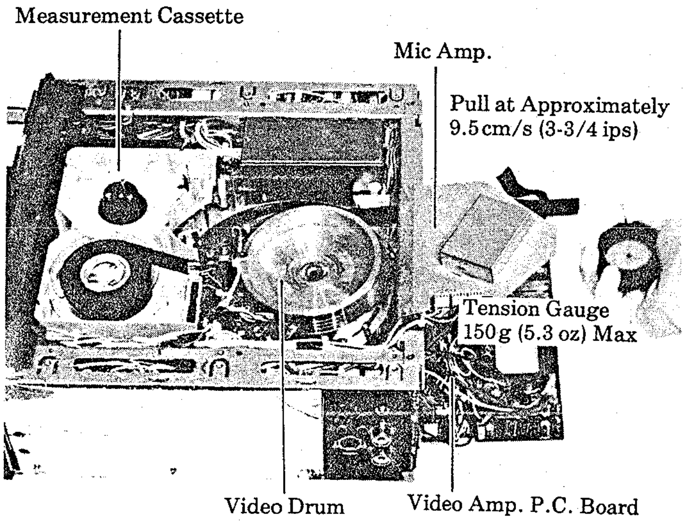

Measurement Cassette
Mic Amp.
Pull at Approximately 9.5cm/s (3-3/4 ips)
Tension Gauge 150g (5.3 oz) Max
Video Drum
Video Amp. P.C. Board

Fig. 30

9. RECORD TIMING SWITCH AND TAKEUP REEL DISK BRAKE SYSTEM ADJUSTMENT

The record timing switch plays an important part for the back-space editing, so that if the record timing switch is incorrectly positioned, a satisfactorily edited picture cannot be obtained.
When an erased picture (noise) appears at the editing point, the record timing switch operation timing is late. When a noisy picture appears at the editing point without FM waveform variation, the record timing switch operation timing is early.
If either of the above conditions are found at the editing point, record timing switch adjustment (B) is necessary. Before the adjustment is performed, check the takeup reel disk brake timing (A) as follows.

A. Takeup Reel Disk Brake Timing

1. Set the unit to play mode without cassette tape.
   Note: When setting the unit to play mode without a cassette, light from the LED should be excluded by covering the photo-diode. If not, the unit will noe operate.
2. Check the 0.5 mm (0.02 inch) clearance between the takeup reel disk and two brakes (Pause brake and main brake) as shown in Fig. 31.
3. Adjustment of clearance is made by bending the brake lever (A) and brake lever (B) as shown in Fig. 31. After this adjustment, set the unit to rewind mode.
   In this time, check that both brakes are released from the takeup reel disk.

B. Record Timing Switch Adjustment

1. Then set the unit to play mode, without a cassette being installed.
2. After the pressure roller is pressed to the capstan shaft, turn off the AC ADAPTOR (NV-B50) or disconnect the battery, while pushing the PLAY key.
3. Check the position of the loop arm by slightly moving the arm in the direction of indicated by the arrow as shown in Fig. 31.
4. When the inner edge of the loop arm moves to the position (C) which is 4.5—6.0mm before the normal play position, the record timing switch is turned ON.
5. If the micro switch operation timing is incorrect, adjust by changing the operation timing of the micro switch usnign screw (D) as shown in Fig. 31.
   Note: After this adjustment, check the movement of the leaf spring actuator does not touch the cassette housing.
   The foregoing steps complete check the adjustment of the record timing switch.
   Finally ensure that satisfactorily edited picture are obtained.

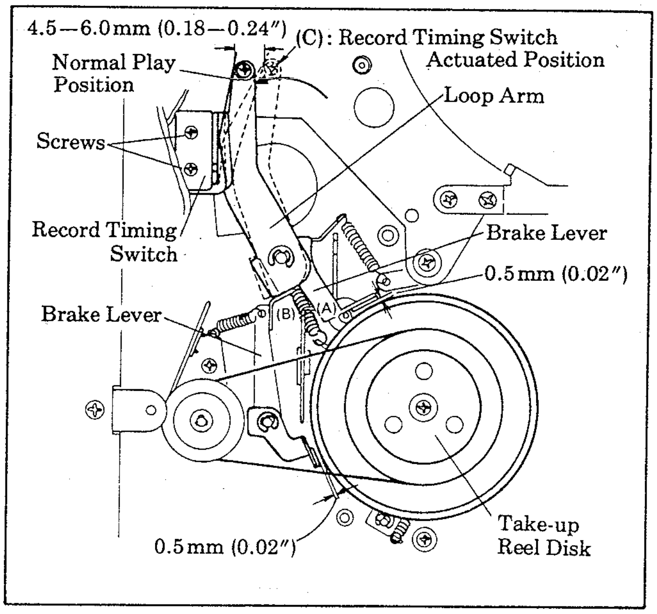


Fig. 31

10. DC MOTOR REPLACEMENT (CAPSTAN & DRUM MOTOR)

1. Remove the Color Amplifier circuit board (Remove the connectors of P38, 39, 41, 43.)
2. Remove the connector of P22 on the Motor Driver circuit board.
3. Remove the capstan motor belt and the drum motor belt.
4. Unscrew the 3 screws (A) and remove the DC motor assy.
5. Loosen the setscrews on each motor pulley by the hex wrench VFK0170, then remove the motor pulleys.
6. Remove the wdire clamp for the motors located above the chassis.
7. Remove the applicable DC motor from the motor bracket by unscrewing the 3 screws (B).
8. Remove the motor's terminal cap by loosening the screw (C) and then unsoldering the motor's wires.
9. Install the new motor by reversing the above steps.

10. When mounting a motor pulley to a DC motor, be careful to install on a motor shaft exactly as shown in Fig. 34.
    Then, verify the belt running position at the play mode as in figure.
    If not, adjust the height of the motor pulley.
    Note: After replacement, fasten the motor wires by wire clamp.

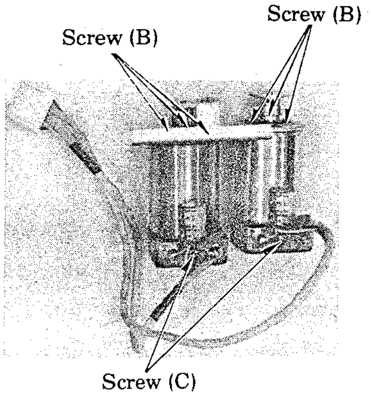

Screw (B)
Screw (B)
Screw (C)

Fig. 32

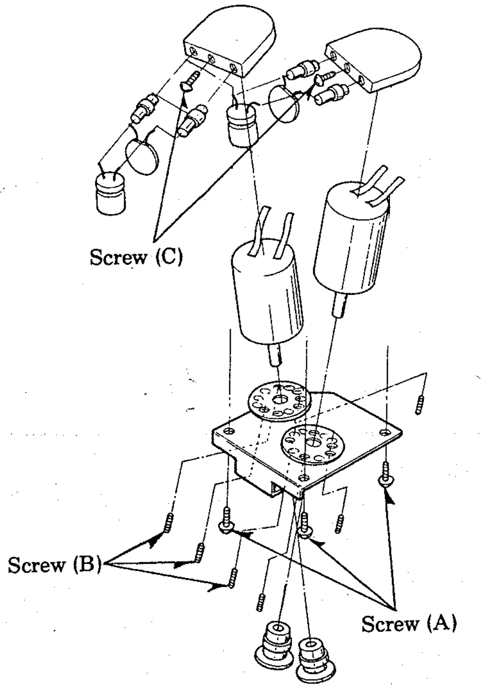

Screw (C)
Screw (B)
Screw (A)

Fig. 33

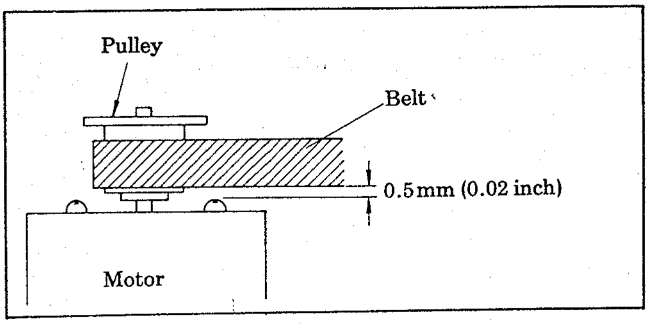

Pulley
Belt
0.5mm (0.02 inch)
Motor

Fig. 34

11. **PRESSURE ROLLER SOLENOID REPLACEMENT**
    1. Remove the Color Amplifier circuit board and remove all connectors on the color Amplifier circuit board.
    2. Unscrew the 2 screws (A) and the screw (B), then remove the solenoid coil portion with micro switch pulling out the plunger.
    3. Unscrew the 2 screws (C) and remove the solenoid bracket with the micro switch.
    4. Unsolder the wires and diodes from the solenoid coil terminal (Note the polarity of diode).

    Note: When installing the solenoid plunger to the solenoid coil, clean and wipe the solenoid plunger and inside of the solenoid coil.

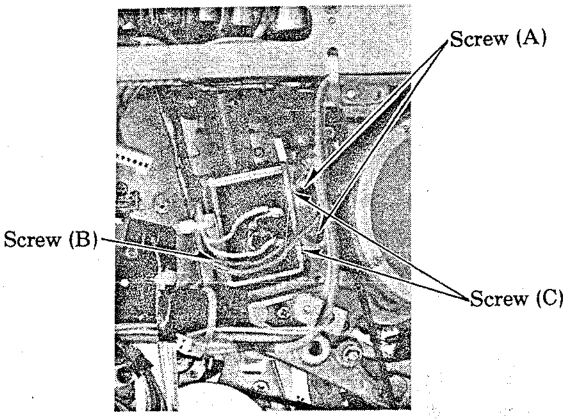

Screw (A)
Screw (B)
Screw (C)

Fig. 35

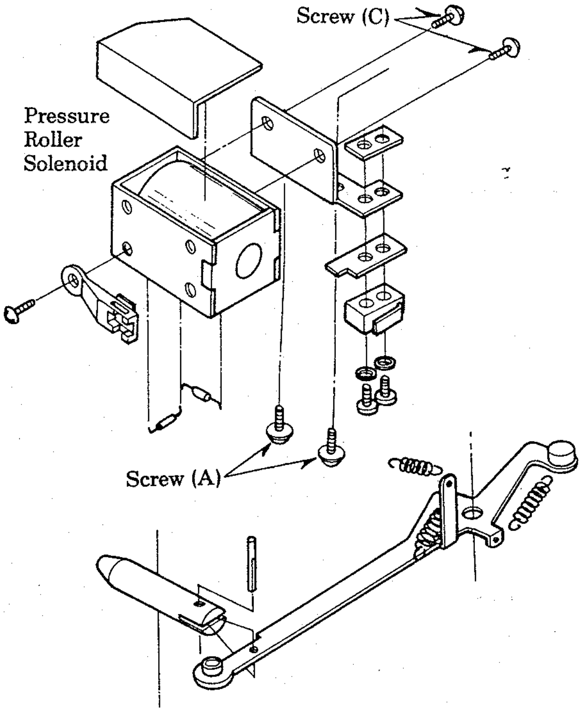
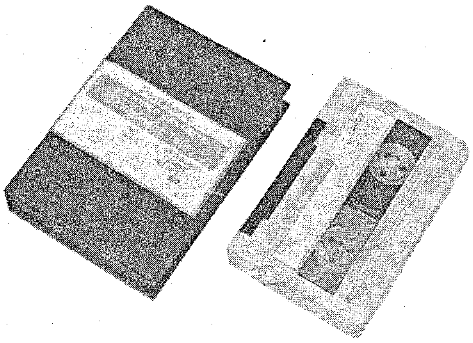
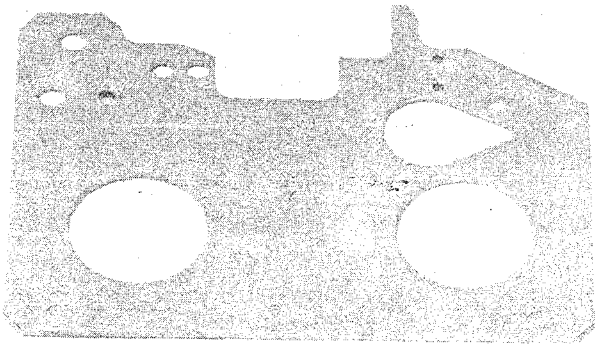

Screw (C)
Pressure
Roller
Solenoid
Screw (A)

Fig. 36

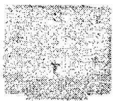
SERVICING JIG & TOOL



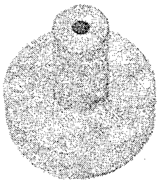
VFM2182S Alignment Tape



VFK0164 Master Plane Jig

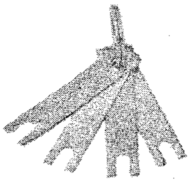


VFK0165 Reel Disk Height Adjustment Jig

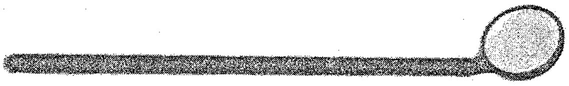


VFK0166 Reel Disk Gap Gauge

VFK0167 A/C Head Positioning Jig



VFK0168 Gap Gauge Set



VFK0169 A/C Head Mirror

ELECTRICAL ADJUSTMENT PROCEDURES

1. *General*

1-1. Introduction

The NV-9400E is designed for high reliability. The electrical system has been completely adjusted and carefully inspected before shipment from the factory.

For this reason, the following procedure is needed principally when mechanical parts are replaced and readjustment of the electronic and signal systems is made necessary by such replacements.

If the electrical system should fail, be sure to check all voltages and waveforms before attempting any adjustments.

Note that correct operation is achieved when all circuits are properly adjusted, and therefore, improper adjustment of a single block may disrupt all functions. The best procedure is to locate the cause of trouble first, then begin repair, replacement or adjustment.

This section describes the electrical adjustments which may become necessary when printed circuit boards or major components have been replaced.

An MOS type IC is employed for IC2 (MN115) in the Sync Signal Generator (SSG) circuit. MOS ICs are extremely fragile and may be very easily destroyed by improper handling. Always observe the following precautions when servicing these units.

1. These ICs are shipped pinned to a conductive foam plastic base. They must not be separated from this base while in storage. If you are using one of serveral ICs pinned to a common base, remove it from the others by cutting the base. Keep the base attached to the IC until you are ready to mount it. Do NOT substitute any other material for the base.
2. There are several precautions to be observed when soldering the new IC into the circuit. Always use a low wattage soldering iron with an isolation transformer. The work bench should be covered with a conductive metal sheet with the chassis under repair grounded.
3. If it is impossible to obtain an isolation transformer, the soldering iron tip, chassis and technician must all be at a common potential.
4. When the IC is installed and power applied, the case is at +9V DC. If the case is shorted to ground, the IC may be damaged.

Test Equipment

1. VTVM (Vacuum Tube Volt Meter).
   Voltage Range: 0.005—50V
2. Dual Trace Oscilloscope with Delay Function.
   Voltage Range: 0.005—5V/div
   Frequency Range: 20MHz
   Probes: 10 : 1 and 1 : 1
3. Frequency Counter.
   Frequency Range: 0—10MHz
4. Signal Generator.
   Split-Field Colour Bar Signal
   Stairstep Signal
   Sine Wave Signal; Frequency Range: 0—10MHz
5. Reference Test Tape (VFM2182S).
   EIA Monoscope Pattern Signal (Audio: 1kHz −10dB)
   Colour Bar Signal with Music
   60% Multiburst Signal (Audio: 1kHz, 0dB)
   Only Control Signal (Audio: 3kHz, 0dB)
6. Sweep Generator.
7. Colour Monitor TV.
8. Plastic Tip Driver.

2. *Layout of Electronic Assemblies*

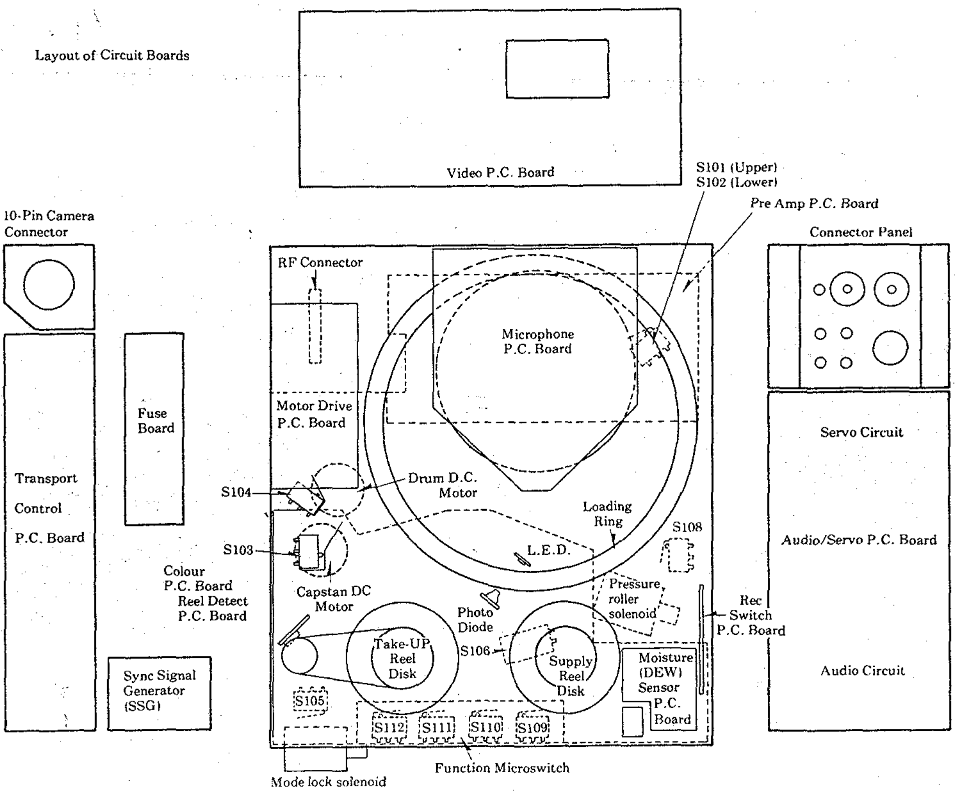

Layout of Circuit Boards
Video P.C. Board
S101 (Upper)
S102 (Lower)
Pre Amp P.C. Board
10-Pin Camera Connector
Connector Panel
RF Connector
Microphone P.C. Board
Motor Drive P.C. Board
Fuse Board
Servo Circuit
Transport Control P.C. Board
S104
Drum D.C. Motor
Loading Ring
S108
S103
L.E.D.
Audio/Servo P.C. Board
Colour P.C. Board
Reel Detect P.C. Board
Capstan DC Motor
Pressure roller solenoid
Rec Switch P.C. Board
Photo Diode
Take-UP Reel Disk
S106
Supply Reel Disk
Moisture (DEW) Sensor P.C. Board
Audio Circuit
Sync Signal Generator (SSG)
S105
S112
S111
S110
S109
Function Microswitch
Mode lock solenoid

Fig. 1

3. Pre-Amp Circuit (VEP0364B1)

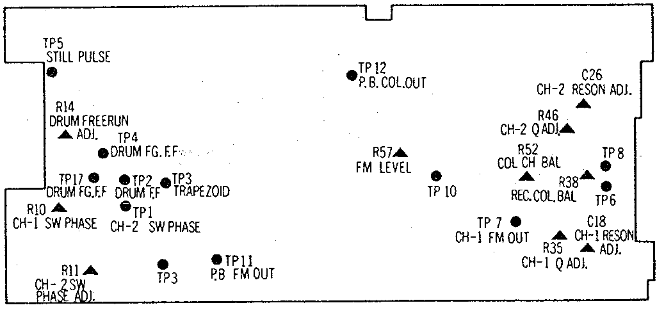

TP5
STILL PULSE
TP 12
P.B. COL.OUT
C26
CH-2 RESON ADJ.
R14
DRUM FREERUN
ADJ.
TP4
DRUM FG. F.F
R46
CH-2 Q ADJ.
R57
FM LEVEL
R52
COL CH BAL
TP 8
TP17
DRUM FG.F.F
TP2
DRUM F.F
TP3
TRAPEZOID
TP 10
R38
REC.COL.BAL
TP6
R10
CH-1 SW PHASE
TP1
CH-2 SW PHASE
TP 7
CH-1 FM OUT
C18
CH-1 RESON ADJ.
R35
CH-1 Q ADJ.
R11
CH-2 SW PHASE ADJ.
TP3
TP11
P.B FM OUT

Fig. 2

3-1. Drum Frequency Generator (FG) Amplifier Gain Check

1. Connect the oscilloscope to TP-16 on the Pre-amplifier circuit board (VEP0364B1).
2. Set the unit to Record mode. Use colour bar input from signal generator.
3. Check that the level of TP-16 is 2.5 Vp-p or more as shown in Fig. 3.
4. Also, check that the frequency of TP-16 is 4920 Hz.

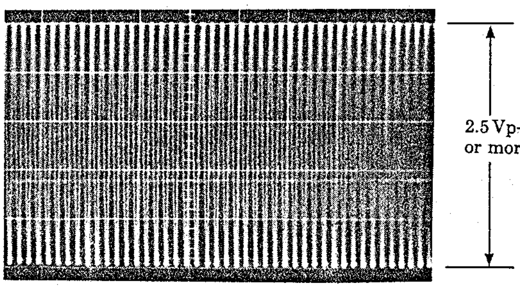

2.5 Vp-p
or more

Fig. 3

3-2. Drum FG Flip-Flop Output Check

1. Connect the oscilloscope to TP-17 on the Pre-amplifier circuit board (VEP0364B1).
2. Set the unit to Record mode. Use colour bar input from signal generator.
3. Check the level of TP-17.
4. Level of flip-flop output is about 5.0 V ±0.5 Vp-p as shown in Fig. 4.

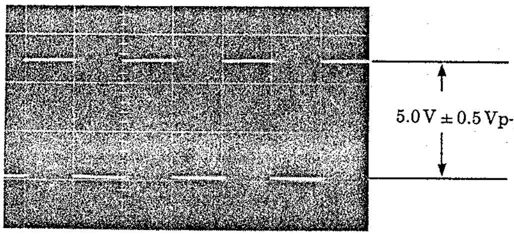


Fig. 4

3-3. Discriminator Adjustment

1. Connect the oscilloscope to TP-4 on the Pre-amplifier circuit board (VEP0364B1).
2. Set the unit to Record mode. Use colour bar input from signal generator.
3. Adjust R14 (DRUM DISCRI ADJ.) that the pulse width of TP-4 is 56μsec. as shown in Fig. 5.

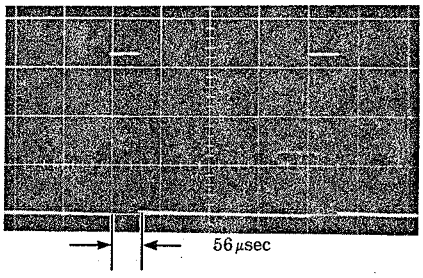


Fig. 5

3-4. Drum Flip-Flop Check

1. Connect the oscilloscope to TP-2 on the Pre-amplifier circuit board (VEP0364B1).
2. Set the unit to Record mode. Use colour bar input from signal generator.
3. Check that the pulse width of TP-2 is 40 msec. as shown in Fig. 6.

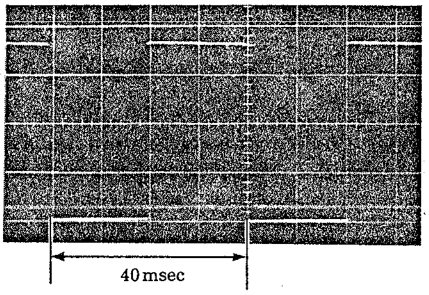


Fig. 6

3-5. Playback Switching Point Adjustment (CH-1 and CH-2)

1. Connect the oscilloscope to TP-14 on the Video circuit board (VEP0363B1).
2. Connect the external sync input of the oscilloscope to TP-2 on the Pre-amplifier circuit board (VEP0364B1).
3. Play back the recorded reference tape (VFM2182S) to reproduce the monoscope segment.
4. Adjust R11 (CH-2 SW PHASE) of the Pre-amplifier circuit board, so that the switching point is 6.5 H before the vertical sync signal as shown in Fig. 7.
5. Next adjust R10 (CH-1 SW PHASE) so that the switching points coincide.

Note: Video signal information may be lost if the CH-1 and CH-2 switching adjustments are adjusted incorrectly. Therefore, care should be taken in making the adjustment.

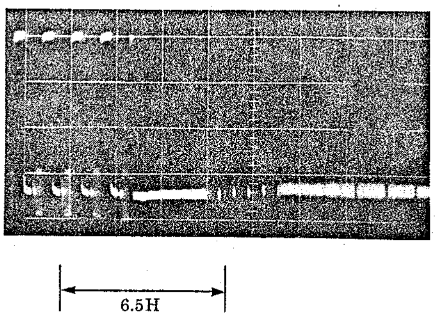


Fig. 7

3-6. Drum Trapezoidal Waveform Check

1. Connect the oscilloscope to TP-3 on the Pre-amplifier circuit board (VEP0364B1).
2. Use the recorded reference tape (VFM2182S).
3. Set the unit to FWD mode.
4. Check the level to TP-3 as shown in Fig. 8.

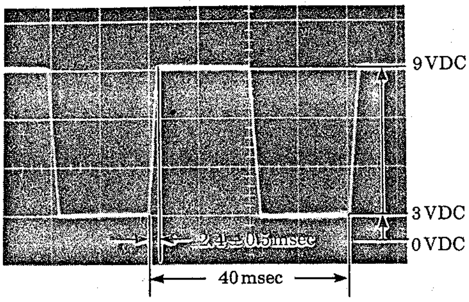


Fig. 8

3-7. Still Mode Check

1. Connect the oscilloscope to TP-5 on the Pre-amplifier circuit board (VEP0364B1).
2. Use the recorded reference tape (VFM2182S).
3. Set the unit to P.B mode. No pulse will be obtained at TP-5.
4. When the unit is set to Still mode, re-check the pulse at TP-5. The pulse should now be at a level of about 8.0 Volts, peak-to-peak, as shown in Fig. 9.

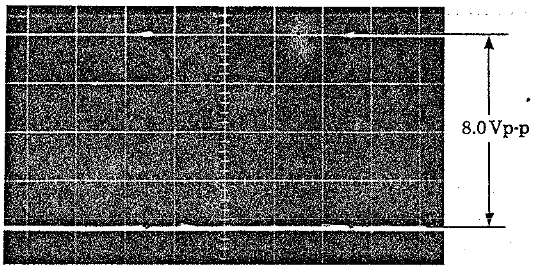


Fig. 9

3-8. Head Resonance and Q Adjustment

1. Place a piece of black tape over two photodiodes which are used for translucent tape sensing.
2. Depress the PLAY BACK button and let the VCR go through the loading cycle without the cassette.
3. Set R52 (COL. CH BAL), R35 and R46 (Q ADJ) to their mechanical centers.
4. Inject a 5.4MHz signal through a coupling network to TP6 on the Pre-amplifier circuit board (VEP0364B1).

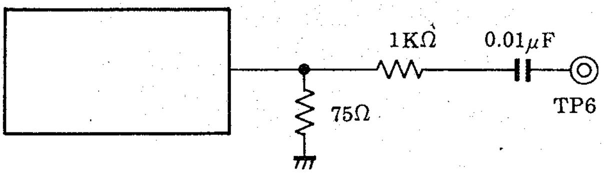


Fig. 10-1

5. Connect the oscilloscope to TP10 on the same circuit board and adjust the generator level so that the waveform is not saturated.
6. Adjust C18 (RESON ADJ) until the signal at TP10 is maximum.

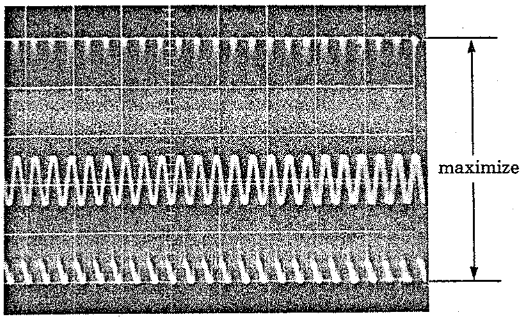


Fig. 10-2

7. Transfer the injected signal from TP6 to TP8 and adjust C26 (RESON ADJ) for maximum output.
8. Disconnect the injected signal and coupling network and remove the black tape from photodiodes.
9. Playback the Multiburst signal of the recorded reference tape (VFM2082D) and make sure that TRACKING is in the fixed position.
10. Hook up the oscilloscope to TP12 on the Video circuit board (VEP0363B1).
11. Adjust R35 and R46 (Q ADJ) so that the 1.25MHz burst amplitude is equal to 0.5MHz burst for both channels.
At the same time make sure that all other bursts have the same amplitude. The scope waveform as well as the monitor picture will have observable flicker otherwise.

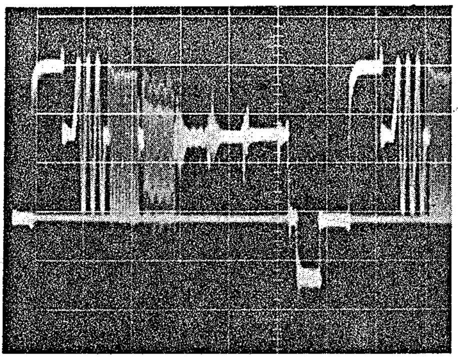


Fig. 10-3

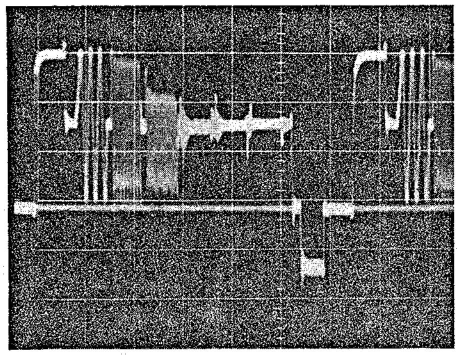


Fig. 10-4

3-9. Adjustment of Playback Colour Channel Balance

1. Connect the oscilloscope to TP-12 on the Pre-amplifier circuit board (VEP0364B1).
2. Play back the Colour Bar signal of recorded reference tape (VFM2182S).
3. Adjust R52 (COL CH BAL) so that both fields have the same peak-to-peak amplitude.
4. Place the unit in Record mode with the Colour Bar signal as the input and make a recording.
5. Play back the recorded signal and check whether the waveform at TP-12 is unbalanced in amplitude.
6. If unbalance is observed, adjust R38 (REC COL BAL) while making a recording and check playback as in the previous step.

3-10. Drop-out Compensator (DOC) Level Check

1. Connect the oscilloscope to TP-11 on the Pre-amplifier circuit board (VEP0364B1).
2. Play back the recorded reference tape (VFM2182S) to reproduce the monoscope segment.
3. Adjust R57 (FM LEVEL), so that the amplitude of TP-11 is 0.4Vp-p.

4. *Servo Control Circuit (VEP0277B1)*

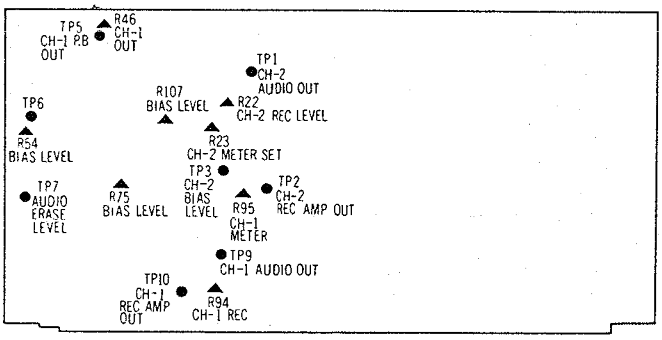


Fig. 11

4-1. Sampling Waveform Check

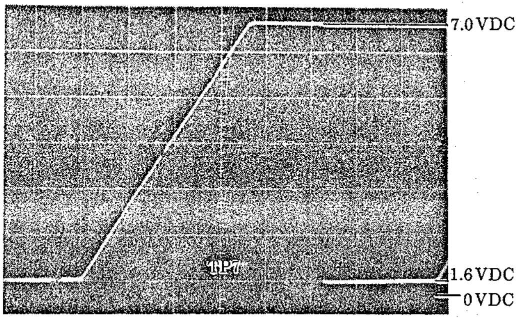


Fig. 12-1

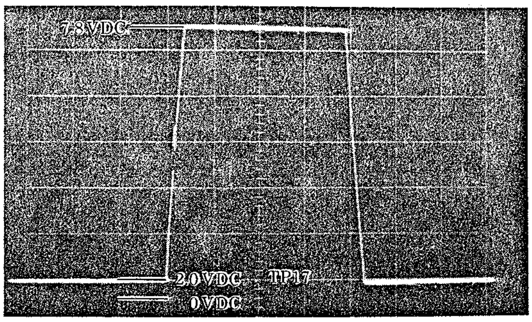


Fig. 12-2

1. Connect the oscilloscope to TP-17 and TP-7 on the Servo circuit part of the Audio and Servo circuit board (VEP0277B1) for the drum sampling and the capstan sampling waveforms, respectively.
2. Play back the recorded reference tape (VFM2182S).
3. The sampling pulse should be stable at the center of the ramp of the trapezoidal waveform on the each test point (TP-7, TP-17) as shown in Fig. 12.
4. In Record mode, check that the sampling pulse is in the same position as when in the P.B mode.

4-2. Switching Point Adjustment

1. Conduct this adjustment after completion of subsecion.
2. Connect the oscilloscope to TP-14 (VIDEO OUT) on the Video printed circuit board (VEP0363B1) to TP-2 of the Preamplifier printed circuit board (VEP0364B1).
4. Setting the unit to the Record mode with the color bar signal as input, adjust R85 (SW POINT ADJ.) on the Servo circuit so that the switching point is 5 to 8H before the vertical sync signal as shown in Fig. 13.
5. Play back the recording in step 4 and check that the switching point is in the correct position.

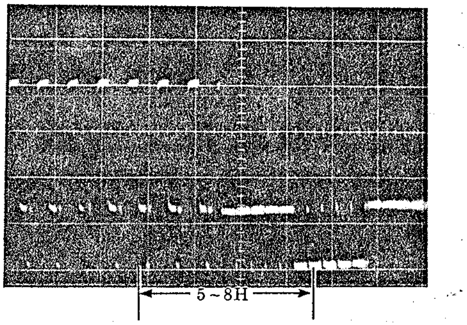


Fig. 13

4-3. Tracking Control Check

1. Connect the oscilloscope to TP-8 on the Video circuit board (VEP0363B1).
2. Record, the play back, a color bar signal. Keep the tracking control in the center position. Adjust R3 (TRACKING SUB VR) with a small screwdriver through the front panel hole, so that the playback FM level is maximum.
3. Set the unit to Record mode. Use the color bar input from the signal generator.
4. Connect the oscilloscope to TP-12 (CAPSTAN REC PHASE) on the Servo circuit (Audio and Servo circuit board).
5. Play back the recording in step 3 and check that the pulse width varies between 2.0msec. and 15msec. when the tracking control is turned throughout its range as shown in Fig. 14.

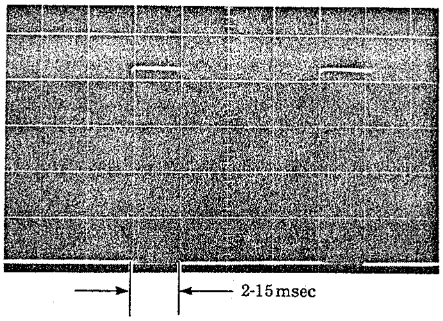


Fig. 14

4-4. Lock-in Time Check

1. Connect the oscilloscope to TP-7 on the Servo circuit part of Audio and Servo circuit board (VEP0277B1).
2. Record, the plawback a color signal, checking for a period of 2 seconds or less, from the time the power supply is turned on, (the pressure roller comes into pressure contact) for P.B mode, to the time a sampling pulse locks on the ramp of the trapezoidal waveform as described in subsection 4-1.
3. Connect the oscilloscope to TP-17 on the same circuit board.
4. Check the lock-in time in the same manner as in step 2 above.

4-5. Adjustment of Tape Speed

1. Connect the frequency counter to TP-1 on the Audio circuit, part of the Audio and Servo circuit board (VEP0277B1).
2. Play back the recorded reference tape (VFM2182S) to reproduce the only control signal segment.
3. Check that the frequency of TP-1 on the Audio (Audio and Servo circuit board (VEP0277B1) is 3000 Hz.
4. Then connect the frequency counter to TP-2 on the Servo circuit, check the pulse width of TP-2 as shown in Fig. 15.
5. Set the unit to Record mode with no video signal as input.
6. Adjust R23 (TAPE SPEED ADJ.) on the Servo circuit to correct pulse width on TP-2 while in the Record mode.

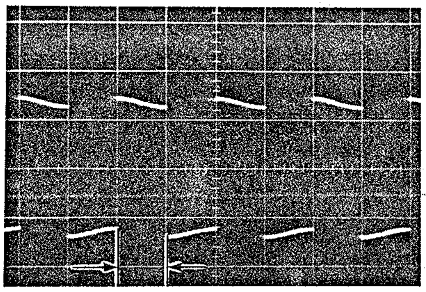

1.005 msec ± 0.003 msec

Fig. 15

4-6. Adjustment of Drum Free-Running Frequency

1. Connect the frequency counter to TP-17 on the Pre-amplifier circuit board (VEP0364B1).
2. Set the unit to Record mode with no video signal input.
3. Adjust R103 (DRUM FREERUN ADJ.) on the Servo circuit so that the frequency of TP-17 is 2448 Hz ± 5 Hz.
4. Then set the unit to Still mode with no signal, check that the TP-17 signal is 2448 Hz ± 5 Hz, the same as when in Record mode.

4-7. Edit Timing Adjustment

1. Connect the external sync input on the oscilloscope to TP-18 of the Servo circuit (Audio and Servo circuit board (VEP 0277B1)).
2. Connect the oscilloscope to TP-7 on the same circuit board (Servo section).
3. Keeping the tracking control knob in the center position, play back the recorded reference tape (VFM2182S) to reproduce the only control signal segment.
4. Check the sampling time (a) from the base of the ramp of trapezoidal waveform to the farther side of the sampling pulse, as shown in Fig. 16.

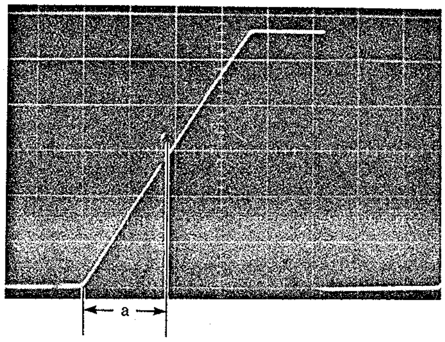


Fig. 16

5. Set the unit to Record mode, adjust R74 (CAPREC PHASE) on the Servo circuit to have the same sampling position as in the P.B mode, described in step 4 above.
6. Then connect the oscilloscope to TP-12 on the Servo circuit, check that the pulse width dueing the Record mode as shown in Fig. 17.
   If not the same as shown in figure, re-adjust according to subsection 4-3 "Tracking control check".

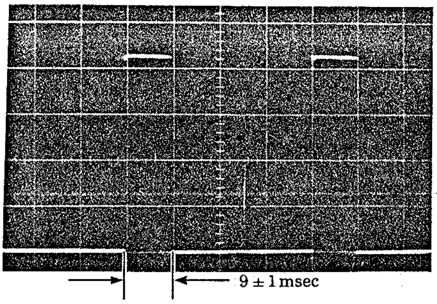

9 ± 1 msec

Fig. 17

5. *Video Circuit (VEP0363B1)*

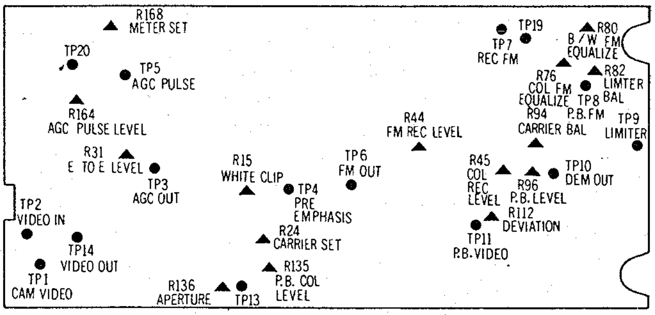

R168
METER SET
TP20
TP5
AGC PULSE
R164
AGC PULSE LEVEL
R31
E TO E LEVEL
TP3
AGC OUT
TP2
VIDEO IN
TP14
VIDEO OUT
TP1
CAM VIDEO
R136
APERTURE
TP13
R135
P.B. COL
LEVEL
R24
CARRIER SET
R15
WHITE CLIP
TP4
PRE
EMPHASIS
TP6
FM OUT
R44
FM REC LEVEL
TP19
TP7
REC FM
R80
B/W FM
EQUALIZE
R76
COL FM
EQUALIZE
R82
LIMTER
BAL
TP8
P.B.FM
R94
CARRIER BAL
TP9
LIMITER
R45
COL
REC
LEVEL
R96
P.B. LEVEL
TP10
DEM OUT
R112
DEVIATION
TP11
P.B.VIDEO

Fig. 18

5-1. Video Output Level (E-to-E) Adjustment

1. Connect the oscilloscope to TP14 (VIDEO OUT) on the Video circuit board (VEP0363B1).
2. Set the unit to Record mode. Use the color bar generator signal.
3. Check the level of TP-14 is as shown in Fig. 19.
   If the level is not correct, adjust R31 (E-to-E LEVEL) to the correct amplitude.

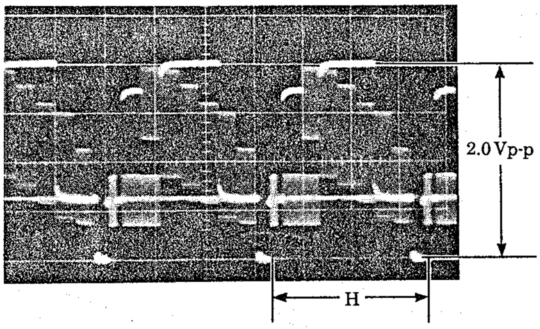
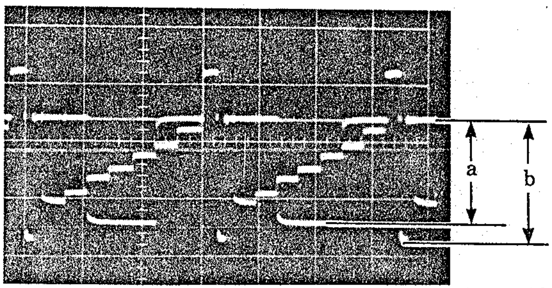


Fig. 19 video output waveform (with no load)

5-2. Automatic Gain Control (AGC) Level Adjustment

1. Connect the oscilloscope to TP-5 on the Video circuit board (VEP0363B1).
2. Set the unit to Record mode. Use the color bar signal.
3. Check the level of TP-5 as shown in Fig. 20. If the level is not correct, adjust R164 (AGC PULSE LEVEL) to the correct amplitude.
   Note: After the above adjustment, the video output level (E-to-E) adjustment should be again checked as shown in subsection 5-1.



a=85% of b

Fig. 20

5-3. Carrier and deviation adjustment

1. Connect the oscilloscope to TP-14 (VIDEO OUT) and TP-7 (REC FM OUT) on the Video circuit board, (VEP0363B1) and set the oscilloscope to "ADD" mode.
2. Connect the high-frequency sine-wave generator output to TP-6 (FM OUT) on the same circuit board.
3. Set the unit to Record mode with the stair-step signal as input.
4. Adjust R15 (WHITE CLIP), so that the signal is not limited, as observed at TP-4 on the same circuit board.
5. Set the frequency of high-frequency sine-wave generator to 3.8MHz, and adjust R24 (CARRIER SET) so that the waveform observed at the oscilloscope shows a zero beat at the bottom of the waveform as shown in Fig. 21-1.
6. Set the frequency of the high-frequency sine-wave generator to 5.4MHz, and adjust R112 (DEVIATION ADJ.) so that the waveform observed on the oscilloscope shows a zero beat at the top of the waveform as shown in Fig. 21-2.

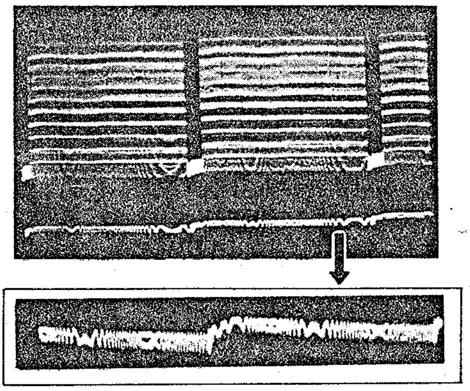


Fig. 21-1 3.8MHz

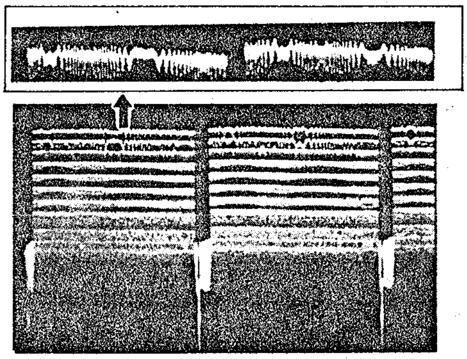
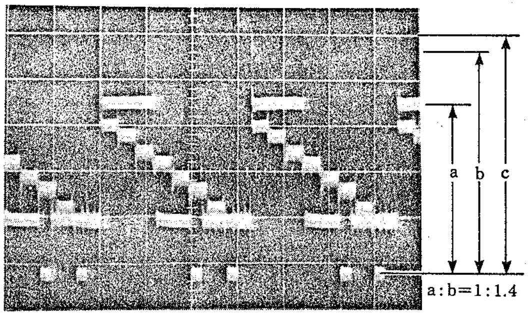


Fig. 21-2

5-4. White Clip Adjustment

1. Connect the oscilloscope to TP-4 (PRE EMPHASIS) on the Video circuit board (VEP0363B1).
2. Set the unit to Record mode. Use the color bar signal as input.
3. Adjust R15 (WHITE CLIP ADJ.), so that the amplitude ratio of transient "spikes" with white clip to without white clip becomes as shown in Fig. 22.



b: with white clip

c: Without white clip

Fig. 22

5-5. Colour Record Level Adjustment

1. Connect the oscilloscope to TP-1 on the Colour circuit board (VEP0840B1).
2. Set the unit to Record mode with the colour bar signal as the input.
3. Play back the cassette recorded in step 2 above, and check that the colour level ot TP-1 is 0.2Vp-p as shown in Fig. 23. If the level is not correct, adjust R45 (COL. REC LEVEL) in the Record mode.

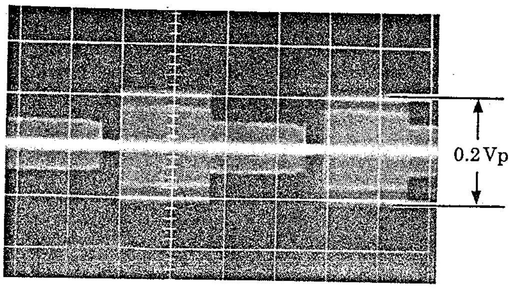


Fig. 23

5-6. FM Record Level Adjustment

1. Connect the oscilloscope to TP-7 on the Video circuit board (VEP0363B1).
2. Set the unit to Record mode with the color bar signal as the input.
3. Adjust R44 (FM REC LEVEL) so that the level of TP-7 is 4.4 Vp-p in the recording mode as shown in Fig. 24.

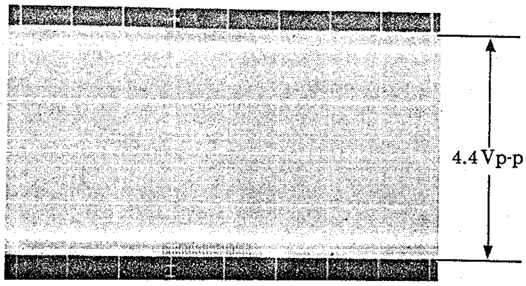


Fig. 24

5-7. Aperture Adjustment

1. Supply to video input the video sweep signal as shown in Fig. 25-1.

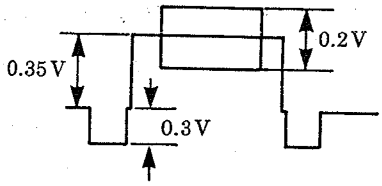


Fig. 25-1

2. Insert a video cassette and place the unit in Rec/Play mode.
3. Connect a scope CH1 to TP-12 and CH2 to TP-14 on the Video printed circuit board.
4. Play back the portion just recorded.
5. Adjust R136 (Aperture) so that the amplitude ratio of TP-12 and TP-14 is equal to each other as shown in Fig. 25-2.

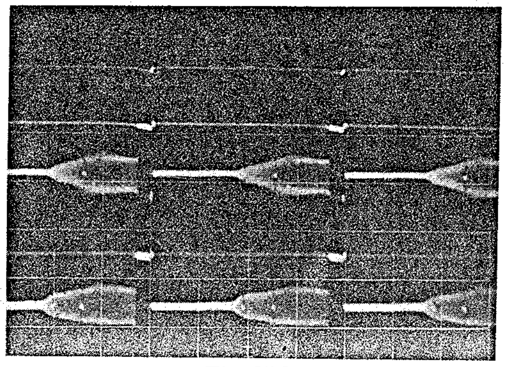


Fig. 25-2

5-8. Limiter and Carrier Balance Adjustment

1. Connect the oscilloscope to TP-10 on the Video printed circuit board (VEP0363B1).
2. Play back the recorded reference tape (VFM2182S) to reproduce the colour bar signal.
3. Adjust R94 (CARRIER BAL) so that the peak white bar (a) becomes a single line and adjust R82 (LIMITER BAL) so that the sync tip (b) forms a single line as shown in Fig. 26.

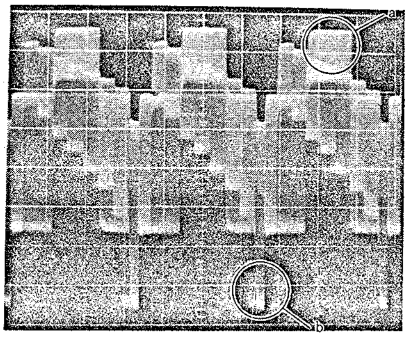


Fig. 26

5-9. Sync Separator Pulse Check

1. Connect the oscilloscope to TP-20 on the Video printed circuit board (VEP0363B1).
2. Play back the recorded reference tape (VFM2182S) to reproduce the colour bar signal.
3. Check the waveform of TP-20 as shown in Fig. 27.

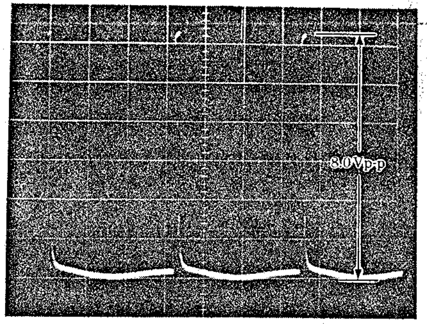


Fig. 27

5-10. Video Output Level Final Adjustment

1. Connect the oscilloscope to TP-14 on the Video circuit board (VEP0363B1).
2. Set the unit to Record mode with the color bar signal as input.
3. Check that the level of TP-14 is 2.0 Vp-p.
4. Play back the recorded reference tape (VFM2182S) to reproduce the colour bar signal.
5. Adjust R96 (P.B. LEVEL) so that the level of TP-14 is 2.0 Vp-p, and adjust R135 (P.B. COL. LEVEL) so that the level of colour signal is 0.6 Vp-p as shown in Fig. 28.

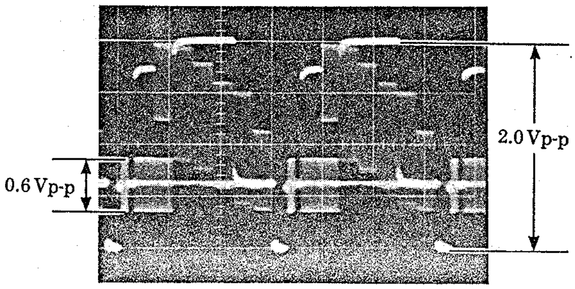


Fig. 28

6. Colour Circuit (VEP0840B1)

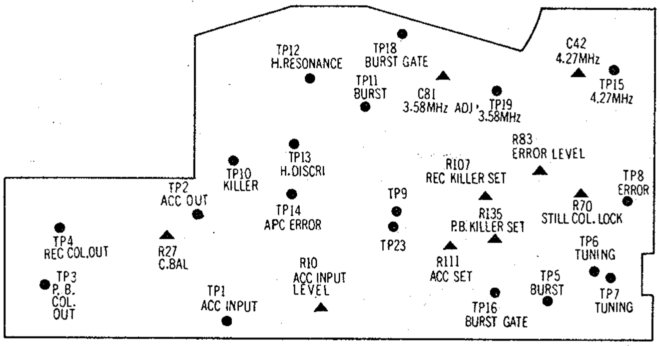

TP12
H.RESONANCE
TP18
BURST GATE
C42
4.27MHz
TP11
BURST
C81
3.58MHz ADJ
TP19
3.58MHz
TP15
4.27MHz
R83
ERROR LEVEL
TP13
H.DISCRI
TP10
KILLER
R107
REC KILLER SET
TP8
ERROR
TP2
ACC OUT
TP9
R70
STILL COL. LOCK
TP14
APC ERROR
R135
P.B. KILLER SET
TP4
REC COL.OUT
R27
C.BAL
TP23
TP6
TUNING
R10
ACC INPUT
LEVEL
R111
ACC SET
TP3
P. B.
COL.
OUT
TP1
ACC INPUT
TP5
BURST
TP7
TUNING
TP16
BURST GATE

Fig. 29

6-1. Automatic Colour Control (AGC) Input Level Check

1. Connect the oscilloscope to TP-1 on the Colour circuit board (VEP0840B1).
2. Play back the recorded reference tape (VFM2182S) to reproduce the colour bar signal.
3. Check that the level of TP-1 is about 0.3 Vp-p as shown in Fig. 30.
   If not the correct level, check the following adjustments, subsections 6-2 and 6-3.

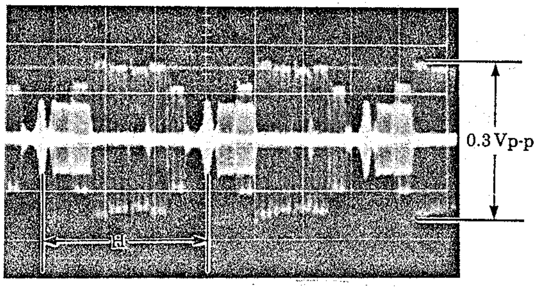


Fig. 30

6-2. Burst Separator Pulse—Record Adjustment

1. Connect the oscilloscope to TP-18 on the Colour circuit board (VEP0840B1).
2. Set the unit to Record mode with colour bar signal as input.
3. Check the waveform of TP-18 as shown in Fig. 31.
4. If not the correct amplitude, adjust L22 so that the burst waveform a on the burst seperator pulse is in the center position, as shown.

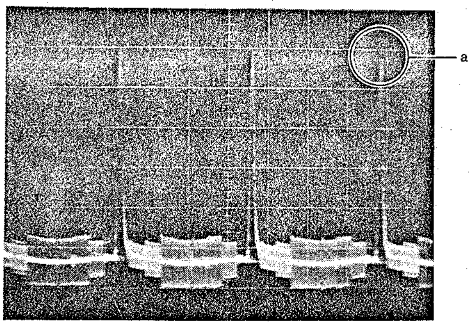


Fig. 31

6-3. Burst Level Adjustment

1. Connect the oscilloscope to TP-11 on the Colour circuit board (VEP0840B1).
2. Set the unit to Record mode with colour bar signal as input.
3. Adjust L21 so that the burst level to maximum as shown in Fig. 32.

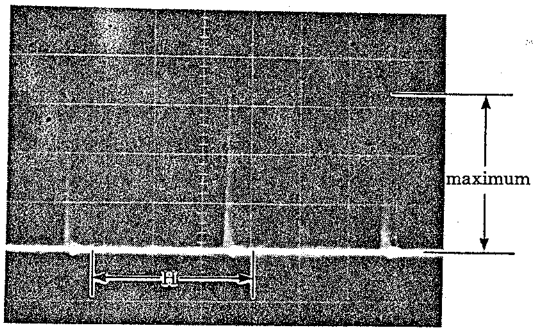


Fig. 32

6-4. ACC Output Level Adjustment

1. Connect the oscilloscope to TP-2 on the Colour circuit board (VEP0840B1).
2. Play back the recorded reference tape (VFM2182S) to reproduce the colour bar signal.
3. Adjust L20 and L21 so that the level of TP-2 is minimum, then adjust R111 (ACC SET REC) to 0.8 Vp-p as shown in Fig. 33.

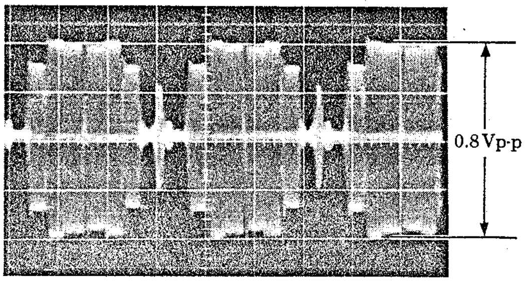
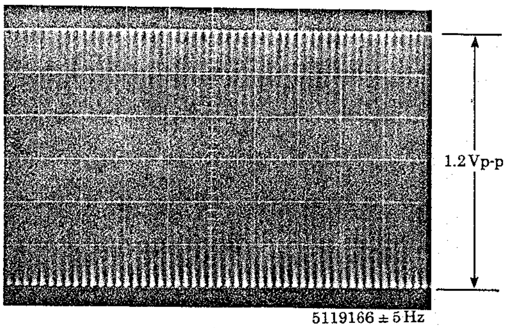


Fig. 33

6-5. Oscillating Frequency (5.12 MHz) Adjustment

1. Connect the frequency counter to TP-15 on the Colour circuit board (VEP0840B1).
2. Set the unit to Record mode with colour signal as input.
3. Adjust C42 (5.12 MHz ADJ.) so that the frequency of TP-15 is 5.119166 MHz ± 5 Hz. Then check the level of the sinusoidal waveform as shown in Fig. 34.



5119166 ± 5 Hz

Fig. 34

6-6. Record Colour Output Level Check

1. Connect the oscilloscope to TP-4 on the Colour circuit board (VEP0840B1).
2. Set the unit to Record mode with colour bar signal as input.
3. Check the level of TP-4 as shown in Fig. 35.

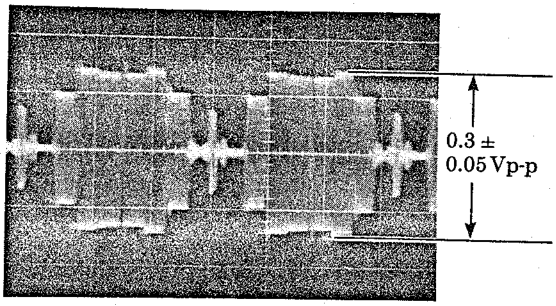


Fig. 35

6-7. Oscillating Frequency (4.43 MHz) Adjustment

1. Connect the counter to TP-19 on the Colour circuit board (VEP0840B1).
2. Play back the recorded reference tape (VFM2182S) to reproduce the colour bar signal.
3. Adjust C81 (4.43 MHz ADJ.) so that the frequency of TP-19 is 4.433619 MHz ± 5 Hz. Then also check the level of the sinusoidal waveform as shown in Fig. 36.

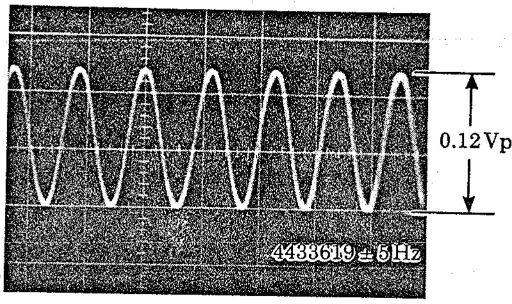


Fig. 36

6-8. ACC Playback Input Level Adjustment

1. Connect the oscilloscope to TP-1 on the Colour circuit board (VEP0840B1).
2. Play back the record reference tape (VFM2182S) to reproduce the colour bar signal.
3. Check the level of TP-1 as shown in Fig. 37.

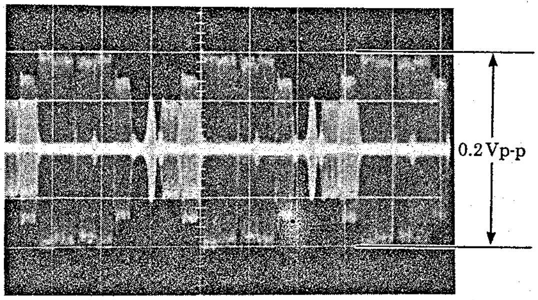


Fig. 37

4. If not the correct amplitude, adjust R10 (ACC INPUT LEVEL) to the correct level.

6-9. Burst Separator Pulse—Playback Adjustment

1. Connect the oscilloscope to TP-5 on the Colour circuit board (VEP0840B1).
2. Play back the record reference tape (VFM2182S) to reproduce the colour bar signal.
3. Adjust L23 so that the position of the burst signal is in the center of the burst separator pulse as shown in Fig. 38.
4. Then adjust the burst separator pulse to maximum level by adjusting L7 and L10.

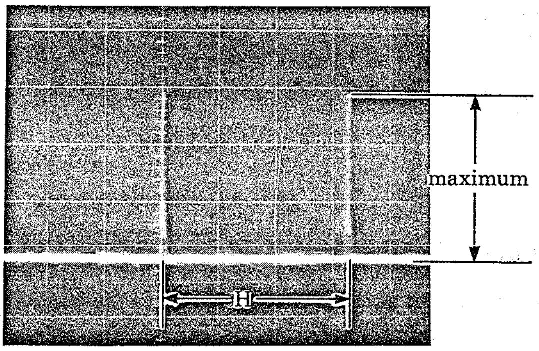


Fig. 38

6-10. ACC Adjustment

1. Connect the oscilloscope to TP-2 on the Colour circuit board (VEP0840B1).
2. Play back the recorded reference tape (VFM2182S) to reproduce the colour bar signal.
3. Adjust L9 so that the level of TP-2 is minimum.
4. Connect the oscilloscope to TP-6 on the Colour circuit. Check the burst waveform is not collapsed.

6-11. Phase Detector Input—Burst Adjustment

1. Connect the oscilloscope to TP-7 on the Colour circuit board (VEP0840B1).
2. Play back the recorded reference tape (VFM2182S) to reproduce the colour bar signal.
3. Adjust T1 so that the level of TP-7 is maximum as shown in Fig. 39.

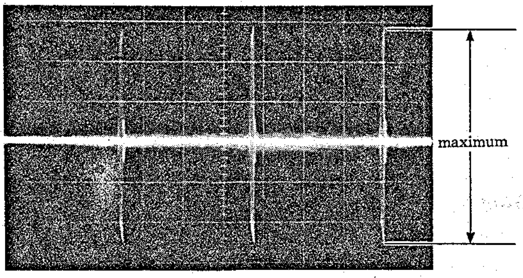


Fig. 39

6-12. Horizontal Discriminator—Input and Output Adjustment

1. Connect the oscilloscope to TP-12 on the Colour circuit board (VEP0840B1).
2. Play back the recorded reference tape (VFM2182S) to reproduce the colour bar signal.
3. Adjust L24 so that the level of TP-12 is maximum as shown in Fig. 40.
4. Connect the digital voltmeter to TP-13, check that the level of TP-13 is 6.8 V DC.
   If not, adjust L25 to correct the DC level.

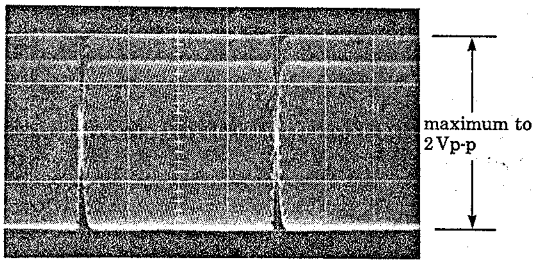


Fig. 40

6-13. Phase Detector—Input Adjustment

1. Connect the oscilloscope to TP-8 on the Colour circuit board (VEP0840B1).
2. Play back the recorded reference tape (VFM2182S) to reproduce the colour bar signal.
3. Before adjustment, turn the COLOUR LOCK konb to the center (click-stop) position.
4. Adjust L15 and L16 so that the level of TP-8 is maximum, then adjust the level of TP-8 to 2.0 Vp-p by turning R83 (ERROR LEVEL) as shown in Fig. 41.

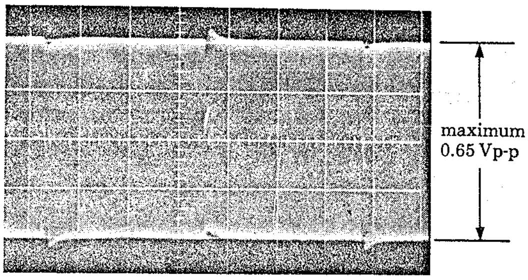


Fig. 41

6-14. Colour Lock—Playback and Still Adjustment

The prior adjustments detailed in subsections 6-4, 6-8, 6-9, 6-11, 6-12, 6-13 should be performed prior to this adjustment.

1. Before adjustment, turn the COLOUR LOCK knob to the center (click-stop) position.
   Also, place the COLOUR LOCK—SUB potentiometer in the center of its range using a small screwdriver.
2. Play back the recorded reference tape (VFM2182S) to reproduce the colour bar signal.
3. Connect the digital voltmeter to TP-24 on the Colour board (VEP0840B1). See Fig. 29.
4. Turn to the SUB potentiometer throughout its range noting the portion of the range during which correct, stable colour is observed on the monitor. At each end-point of the stable range, measure the voltage at TP-24. Now, take the average of the two end-point readings and set the SUB potentiometer at the corresponding point. Re-check the above several times and the mean value of the averages obtained.
5. Set the unit to Still mode.
6. Locate R70 (STILL COL. LOCK) on the Colour printed circuit board (VEP0840B1), referring to Fig. 29. Continue to use the digital voltmeter, connect to TP-24.
7. Follow the same procedure as in step 4 above to set R70, (STILL COL. LOCK) re-checking several times and using the mean value.

6-15. Colour Output Adjustment

1. Connect the oscilloscope to TP-3 on the Colour printed circuit board (VEP0840B1).
2. Play back the recorded reference tape (VFM2182S) to reproduce the colour bar segment.
3. Adjust R27 (BALANCE) so that the level of noise as shown in Fig. 42 is minimum.
4. Check the level of TP-3 is between 0.2 and 0.3 Vp-p.

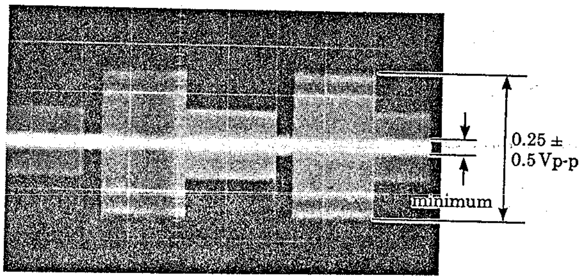


Fig. 42

7. *Audio Circuit (VEP0277B1)*

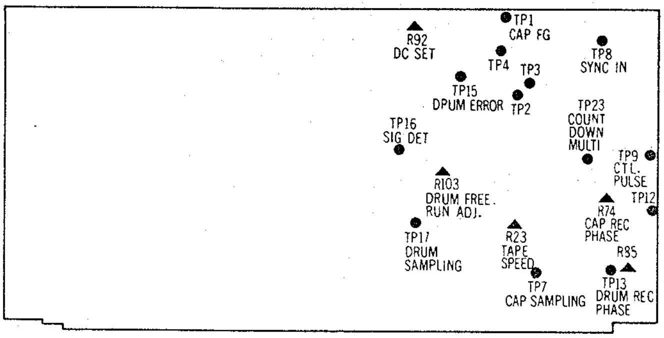


Fig. 43

7-1. Audio (E-to-E) Level Adjustment

1. Supply a 1kHz, −20dB signal to the LINE-IN on the side connector panel.
2. Connect the AC VTVM to LINE-OUT on the connector panel.
3. Set the unit to Record mode.
4. Adjust R9 (CH-1 LINE-IN LEVEL ADJ.) and R18 (CH-2 LINSE-IN LEVEL ADJ.) on the Microphone Amplifier circuit board (VEP0436B1), so that the level of the line output is −3dB.

7-2. Playback Level Adjustment

1. Connect the AC VTVM to CH-1 and CH-2 LINE-OUT on the side connector panel.
2. Play back recorded reference tape (VFM2182S) to reproduce the 1kHz, 0dB segment.
3. Adjust R46 (CH-1 OUTPUT LEVEL ADJ.) and R54 (CH-2 OUTPUT LEVEL ADJ.), so that the level of the line-out is −3dB.

7-3. Record Level Adjustment

1. Connect the oscilloscope to TP-8 on the Audio printed circuit board (VEP0277B1).
2. Set the unit to Record mode with no input audio signal.
3. Check that the level of TP-8 is more than 200 Vp-p, and verify that the frequency of this point is with-in the range from 85 kHz to 115 kHz.
4. Then connect the oscilloscope to TP-7 on the same circuit board.
5. Check that the level of TP-7 is 75 Vp-p, or more.
6. Connect the oscilloscope to TP-3 on the Audio circuit. Adjust R75 (FULL REC LEVEL ADJ.) to 120 Vp-p.
7. Set the unit to Record mode with a 1 kHz, −20 dB audio signal as input.
8. Adjust R22 (CH-1 REC LEVEL ADJ.) and R94 (CH-2 REC LEVEL ADJ.) while in the Record mode. Then check the level of CH-1 line output and CH-2 line output in P.B mode.

Microswitch

S101: Camera Power switch-1
S102: Ring End switch
S103: Record Timing switch
S104: Drum Power switch
S105: Mode Solenoid Hold switch
S106: Power switch
S107: Camera Power switch-2
S108: Pressure Roller switch
S109: Rewind switch
S110: P.B Switch
S111: Stop switch
S112: F.F. switch

Electrical Parts Location

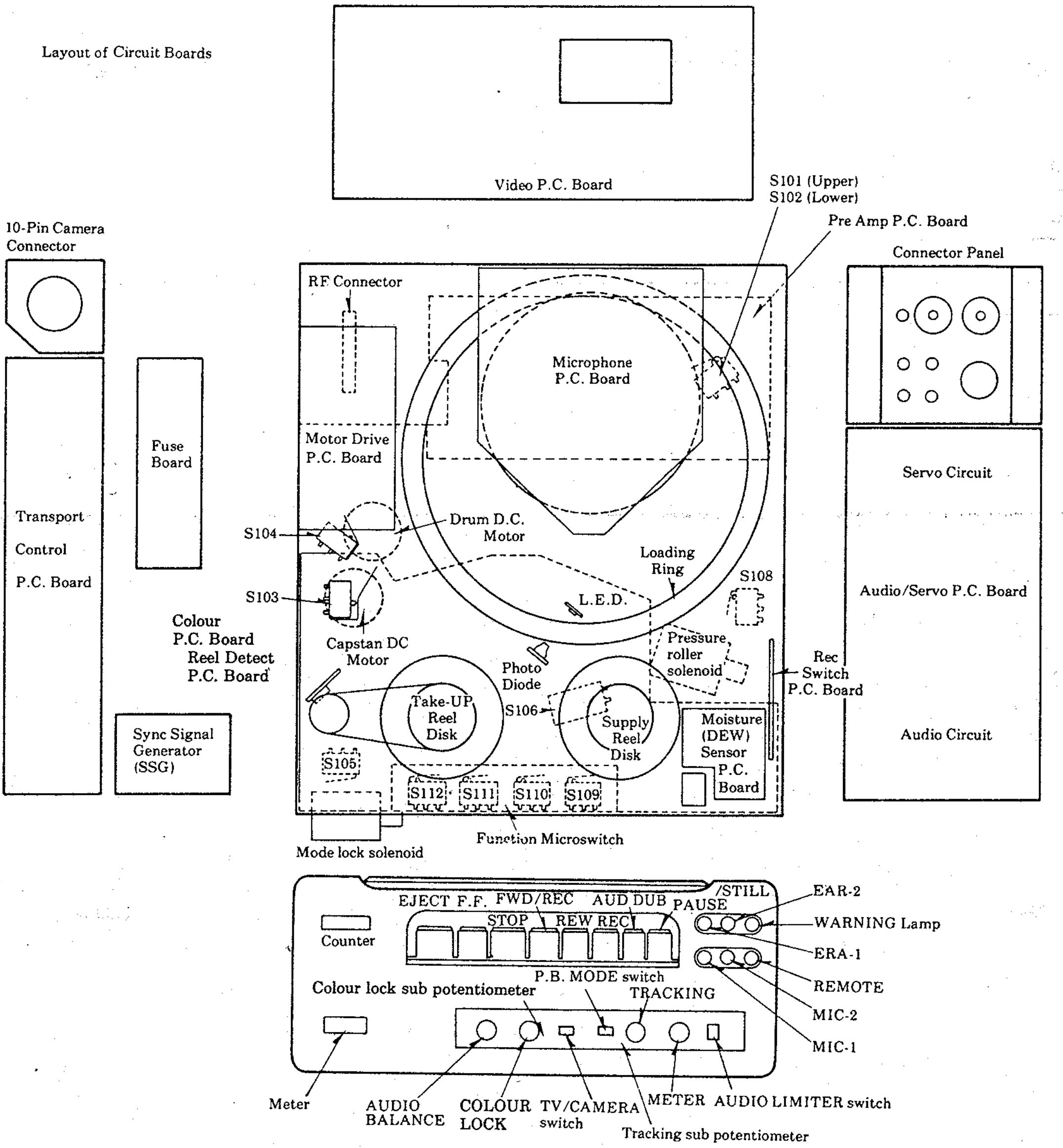
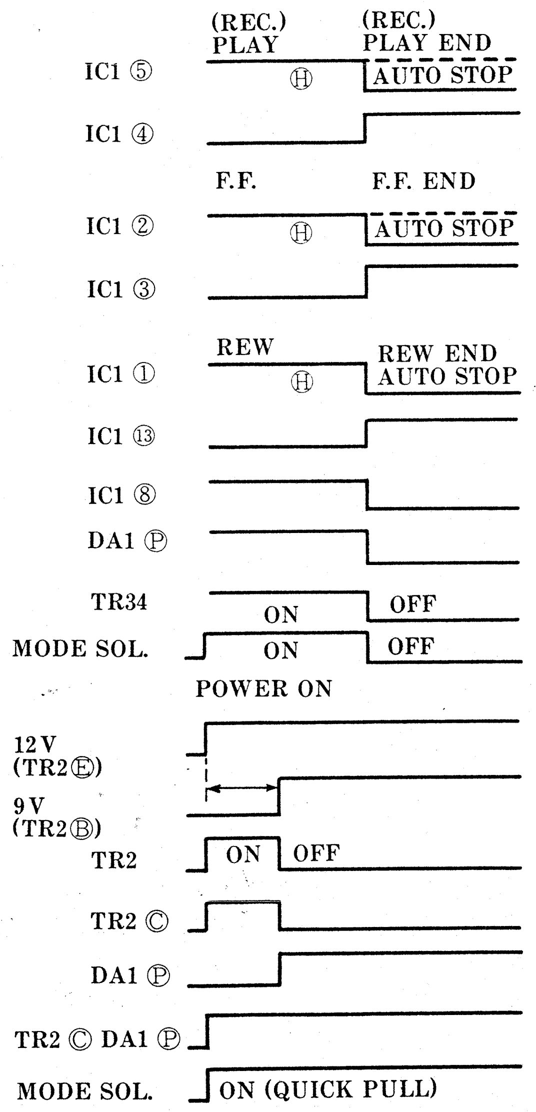

Layout of Circuit Boards
Video P.C. Board
S101 (Upper)
S102 (Lower)
Pre Amp P.C. Board
Connector Panel
10-Pin Camera Connector
RF Connector
Microphone P.C. Board
Motor Drive P.C. Board
Fuse Board
Transport Control P.C. Board
S104
Drum D.C. Motor
Loading Ring
S108
S103
L.E.D.
Colour P.C. Board
Reel Detect P.C. Board
Capstan DC Motor
Photo Diode
Pressure roller solenoid
Servo Circuit
Audio/Servo P.C. Board
Rec Switch P.C. Board
Take-UP Reel Disk
S106
Supply Reel Disk
Moisture (DEW) Sensor P.C. Board
Audio Circuit
Sync Signal Generator (SSG)
S105
S112
S111
S110
S109
Mode lock solenoid
Function Microswitch
EJECT
F.F.
FWD/REC
AUD DUB
PAUSE/STILL
STOP
REW
REC
EAR-2
WARNING Lamp
ERA-1
Counter
REMOTE
P.B. MODE switch
Colour lock sub potentiometer
TRACKING
MIC-2
MIC-1
Meter
AUDIO BALANCE
COLOUR LOCK
TV/CAMERA switch
METER
AUDIO LIMITER switch
Tracking sub potentiometer

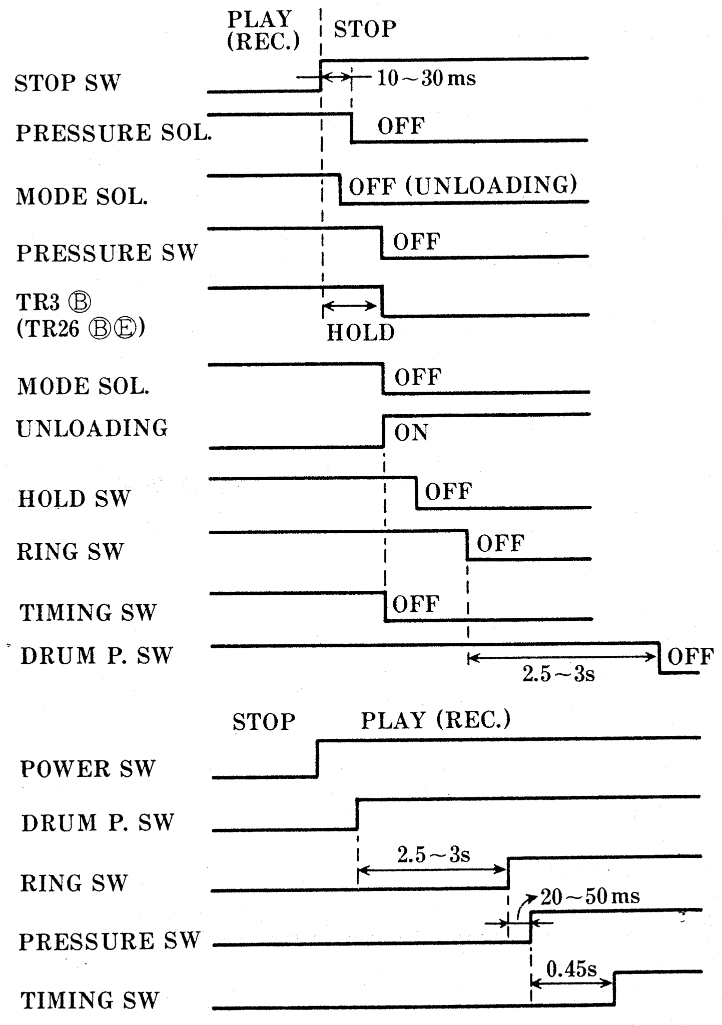
Fig. 44

MEMO

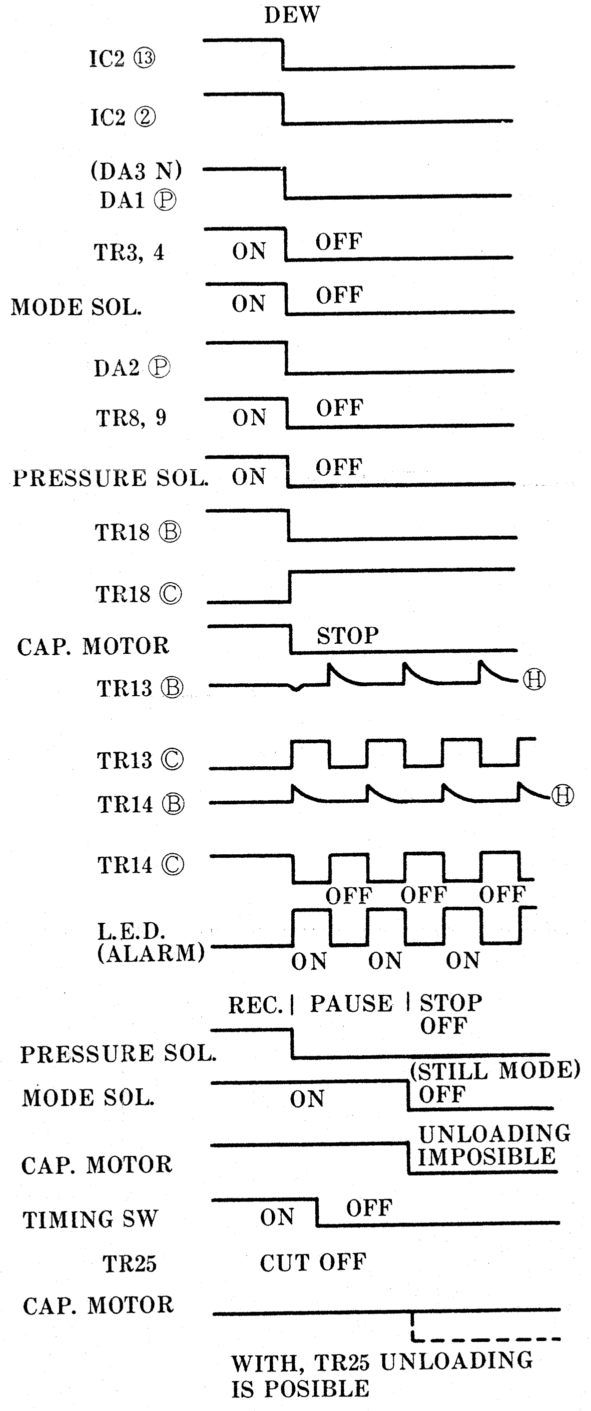
TRANSPORT TIMING CHART



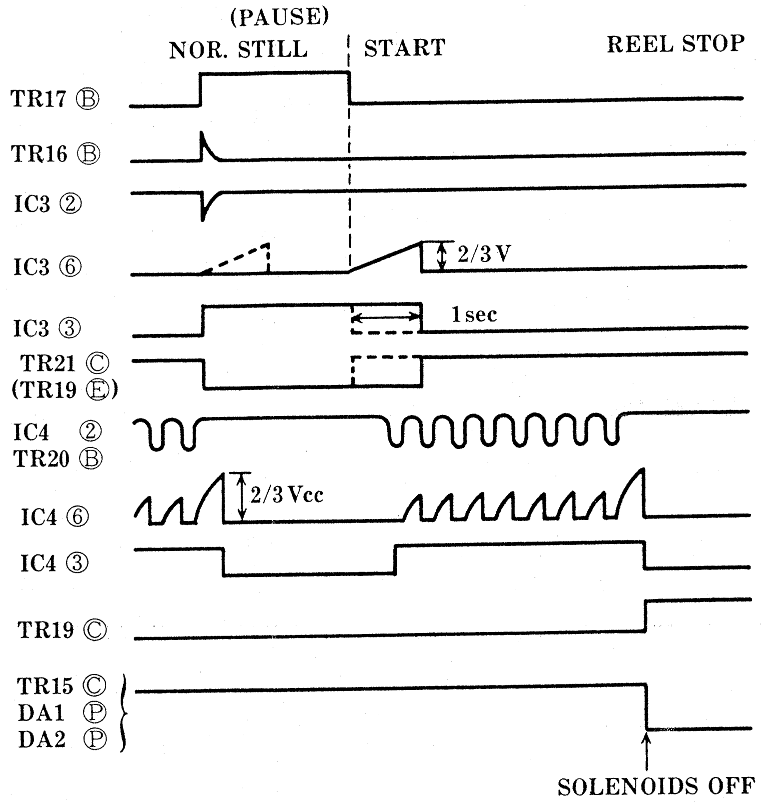
(REC.) PLAY
(REC.) PLAY END
IC1 ⑤
Ⓗ
AUTO STOP
IC1 ④
F.F.
F.F. END
IC1 ②
Ⓗ
AUTO STOP
IC1 ③
REW
REW END
AUTO STOP
IC1 ①
Ⓗ
IC1 ⑬
IC1 ⑧
DA1 Ⓟ
TR34
ON
OFF
MODE SOL.
ON
OFF
POWER ON
12 V (TR2Ⓔ)
9 V (TR2Ⓑ)
TR2
ON
OFF
TR2 Ⓒ
DA1 Ⓟ
TR2 Ⓒ DA1 Ⓟ
MODE SOL.
ON (QUICK PULL)



PLAY (REC.)
STOP
STOP SW
10～30 ms
PRESSURE SOL.
OFF
MODE SOL.
OFF (UNLOADING)
PRESSURE SW
OFF
TR3 Ⓑ (TR26 ⒷⒺ)
HOLD
MODE SOL.
OFF
UNLOADING
ON
HOLD SW
OFF
RING SW
OFF
TIMING SW
OFF
DRUM P. SW
2.5～3s
OFF
STOP
PLAY (REC.)
POWER SW
DRUM P. SW
2.5～3s
RING SW
20～50 ms
PRESSURE SW
0.45s
TIMING SW

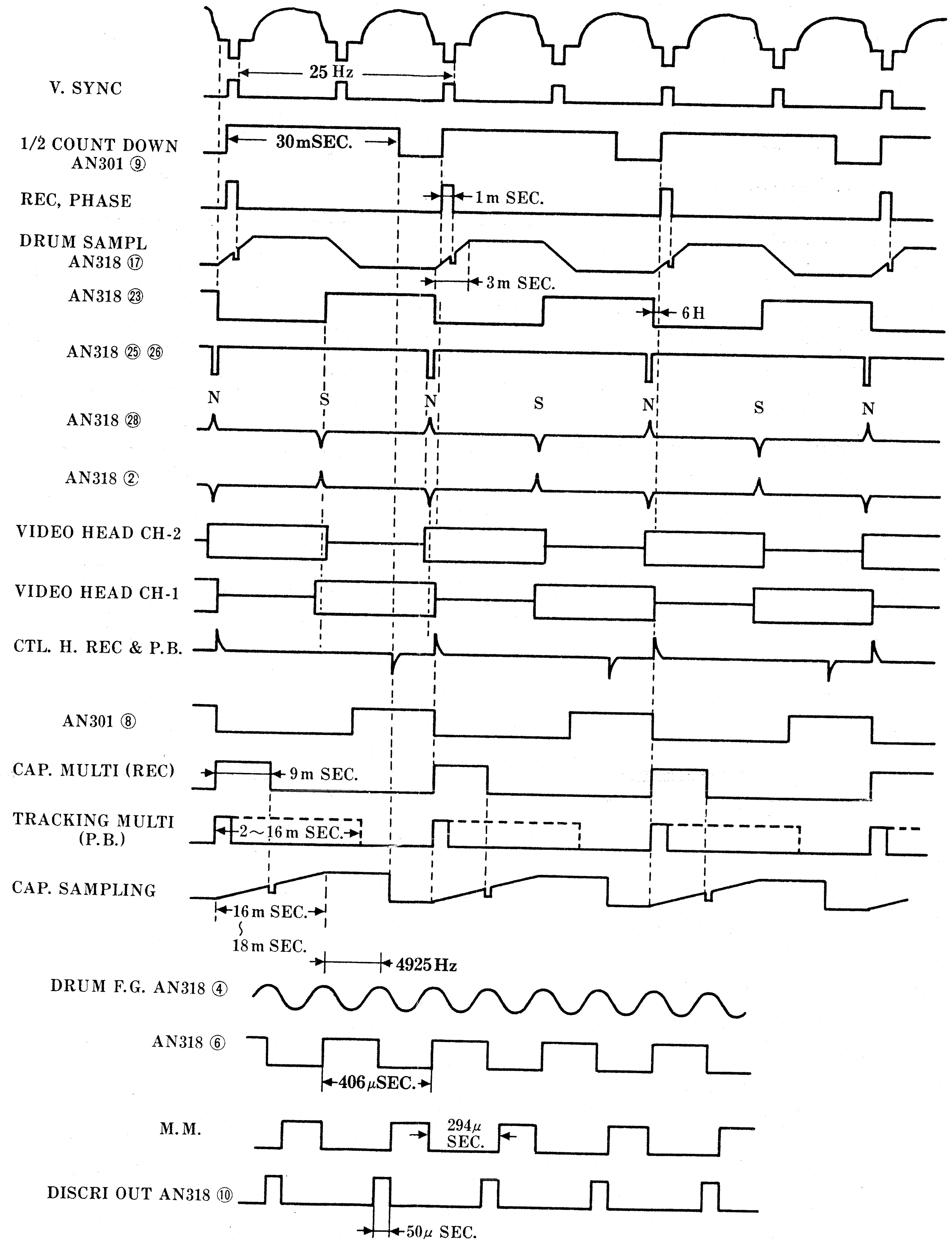


DEW
IC2 ⑬
IC2 ②
(DA3 N) DA1 Ⓟ
TR3, 4
ON
OFF
MODE SOL.
ON
OFF
DA2 Ⓟ
TR8, 9
ON
OFF
PRESSURE SOL.
ON
OFF
TR18 Ⓑ
TR18 Ⓒ
CAP. MOTOR
STOP
TR13 Ⓑ
Ⓗ
TR13 Ⓒ
TR14 Ⓑ
Ⓗ
TR14 Ⓒ
OFF OFF OFF
L.E.D. (ALARM)
ON ON ON
REC.
PAUSE
STOP
OFF
PRESSURE SOL.
(STILL MODE)
MODE SOL.
ON
OFF
UNLOADING IMPOSIBLE
CAP. MOTOR
TIMING SW
ON
OFF
TR25
CUT OFF
CAP. MOTOR
WITH, TR25 UNLOADING IS POSIBLE



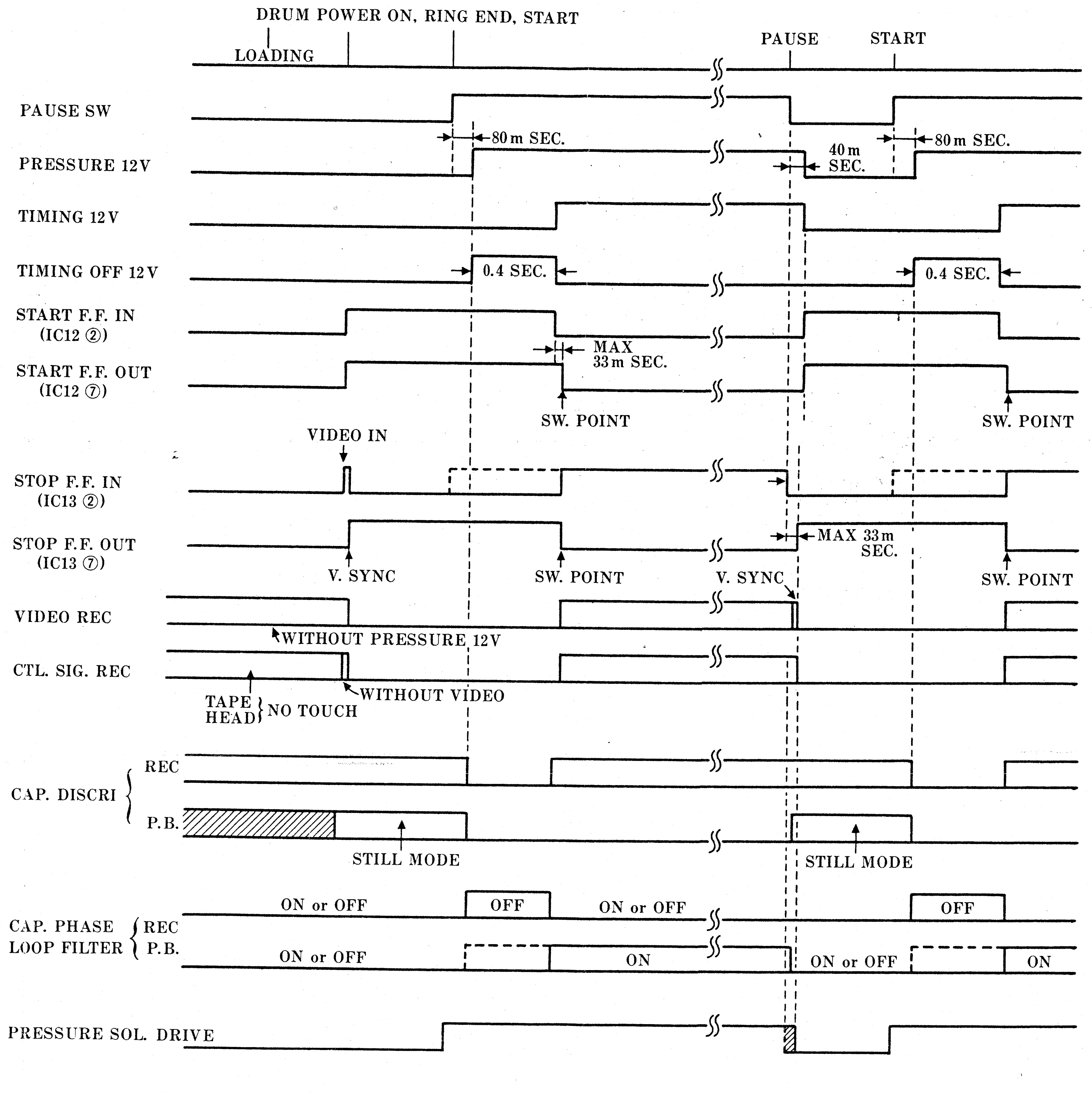
(PAUSE) NOR. STILL
START
REEL STOP
TR17 Ⓑ
TR16 Ⓑ
IC3 ②
IC3 ⑥
2/3 V
IC3 ③
1 sec
TR21 Ⓒ (TR19 Ⓔ)
IC4 ② TR20 Ⓑ
IC4 ⑥
2/3 Vcc
IC4 ③
TR19 Ⓒ
TR15 Ⓒ DA1 Ⓟ DA2 Ⓟ
SOLENOIDS OFF

SERVO TIMING CHART


V. SYNC
25 Hz
1/2 COUNT DOWN AN301 ⑨
30mSEC.
REC, PHASE
1m SEC.
DRUM SAMPL AN318 ⑰
3m SEC.
AN318 ㉓
6H
AN318 ㉕ ㉖
N
S
N
S
N
S
N
AN318 ㉘
AN318 ②
VIDEO HEAD CH-2
VIDEO HEAD CH-1
CTL. H. REC & P.B.
AN301 ⑧
CAP. MULTI (REC)
9m SEC.
TRACKING MULTI (P.B.)
2∼16m SEC.
CAP. SAMPLING
16m SEC. ∫ 18m SEC.
4925 Hz
DRUM F.G. AN318 ④
AN318 ⑥
406μSEC.
M.M.
294μ SEC.
DISCRI OUT AN318 ⑩
50μ SEC.

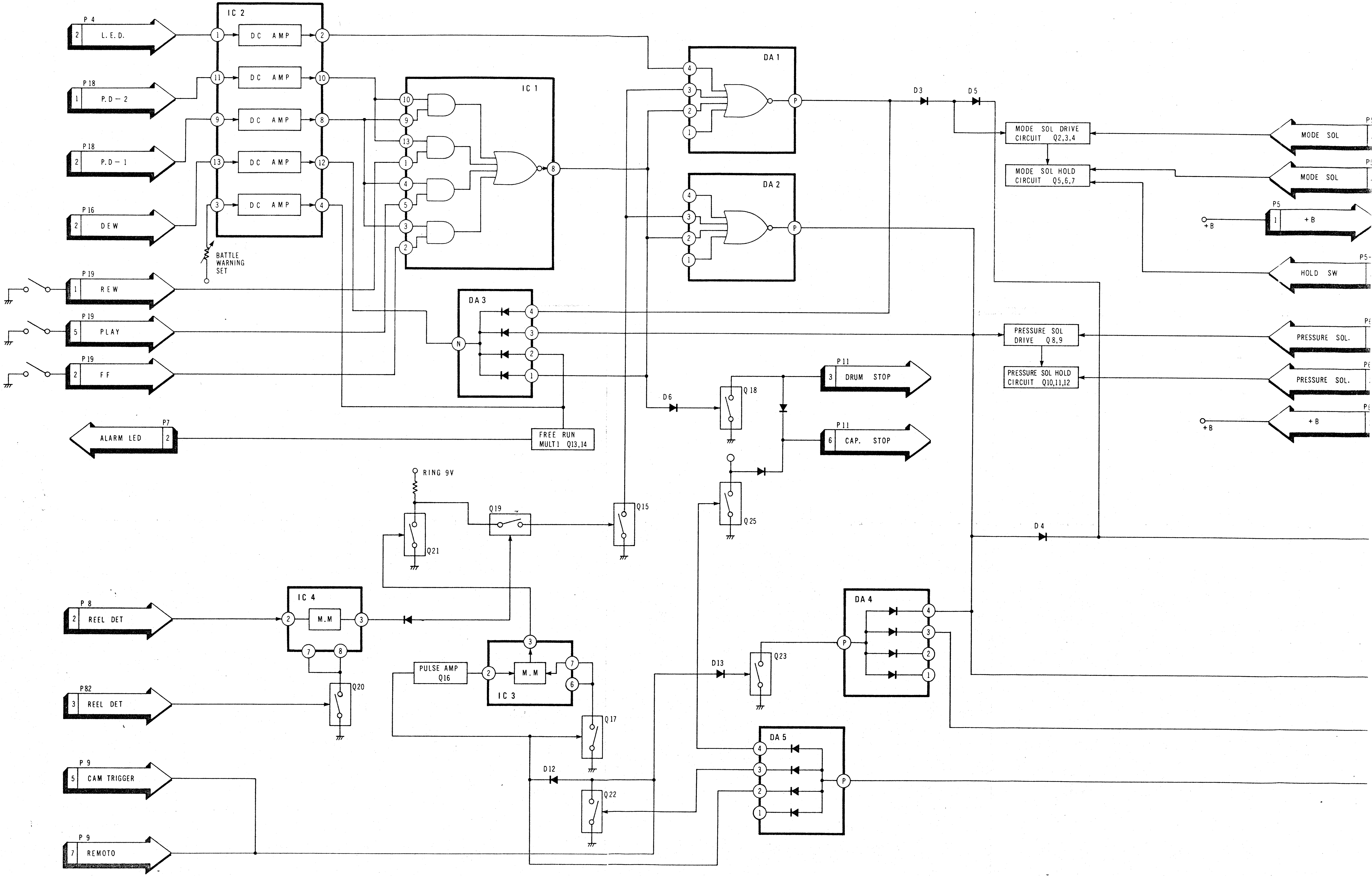
AN301: SERVO AMP IC7
AN318: PRE AMP IC1

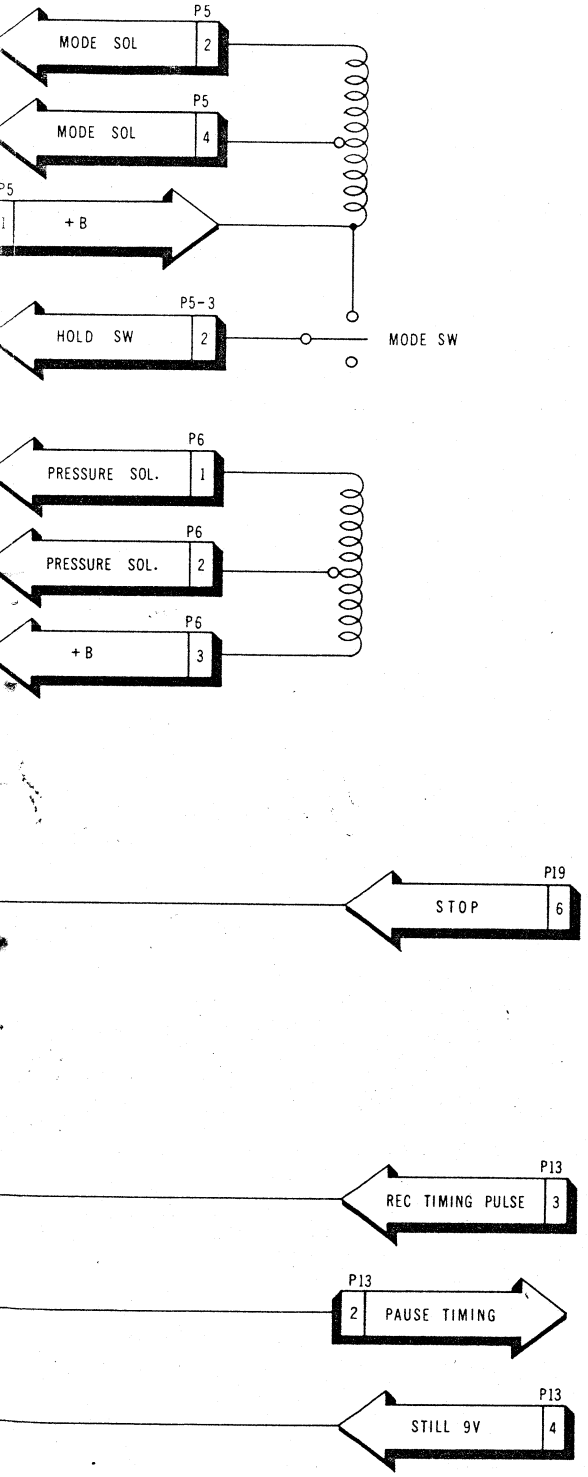
AUTO EDITING TIMING CHART


DRUM POWER ON, RING END, START
LOADING
PAUSE
START
PAUSE SW
80m SEC.
40m SEC.
80m SEC.
PRESSURE 12V
TIMING 12V
TIMING OFF 12V
0.4 SEC.
0.4 SEC.
START F.F. IN (IC12 ②)
MAX 33m SEC.
START F.F. OUT (IC12 ⑦)
SW. POINT
SW. POINT
VIDEO IN
STOP F.F. IN (IC13 ②)
MAX 33m SEC.
STOP F.F. OUT (IC13 ⑦)
V. SYNC
SW. POINT
V. SYNC
SW. POINT
VIDEO REC
WITHOUT PRESSURE 12V
CTL. SIG. REC
WITHOUT VIDEO
TAPE HEAD } NO TOUCH
CAP. DISCRI
REC
P.B.
STILL MODE
STILL MODE
CAP. PHASE LOOP FILTER
REC
P.B.
ON or OFF
OFF
ON or OFF
OFF
ON or OFF
ON
ON or OFF
ON
PRESSURE SOL. DRIVE

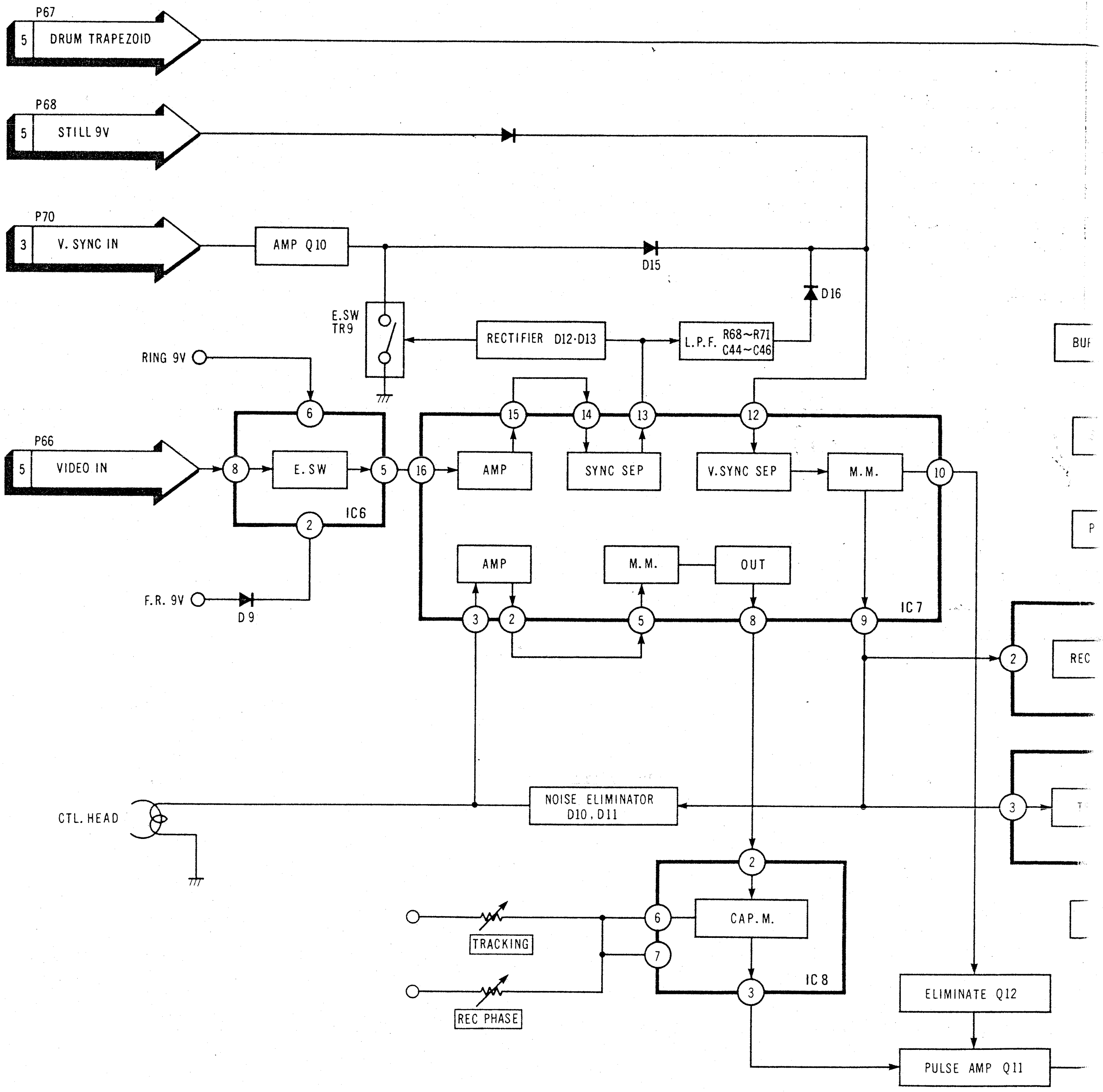
START F.F.: SERVO AMP IC12
STOP F.F.: SERVO AMP IC13

TRANSPORT BLOCK DIAGRAM

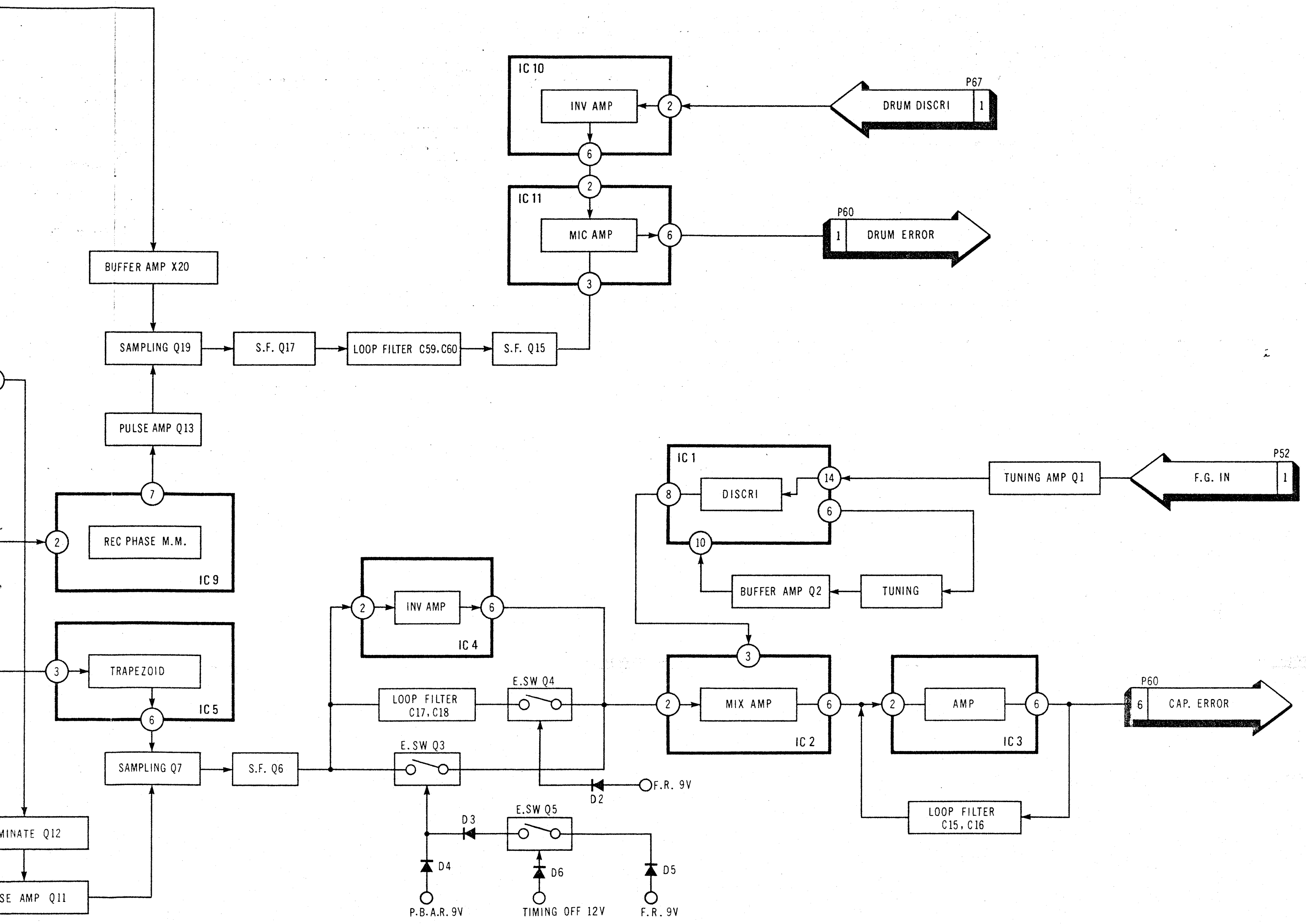

IC 2
P 4
2 L.E.D.
P 18
1 P.D − 2
P 18
2 P.D − 1
P 16
2 DEW
DC AMP
DC AMP
DC AMP
DC AMP
DC AMP
BATTLE WARNING SET
IC 1
DA 1
DA 2
DA 3
D3
D5
MODE SOL DRIVE CIRCUIT Q2,3,4
MODE SOL HOLD CIRCUIT Q5,6,7
MODE SOL
MODE SOL
P5
1 + B
+ B
HOLD SW
PRESSURE SOL DRIVE Q8,9
PRESSURE SOL HOLD CIRCUIT Q10,11,12
PRESSURE SOL.
PRESSURE SOL.
+ B
+ B
P 19
1 REW
P 19
5 PLAY
P 19
2 FF
P 11
3 DRUM STOP
P 11
6 CAP. STOP
Q 18
D6
Q 25
P7
ALARM LED 2
FREE RUN MULT1 Q13,14
RING 9V
Q19
Q15
Q21
D 4
IC 4
M.M
P 8
2 REEL DET
P82
3 REEL DET
Q20
PULSE AMP Q16
M.M
IC 3
Q17
D13
Q23
DA 4
DA 5
D12
Q22
P 9
5 CAM TRIGGER
P 9
7 REMOTO


P5
MODE SOL
2
P5
MODE SOL
4
P5
1
+ B
P5-3
HOLD SW
2
MODE SW
P6
PRESSURE SOL.
1
P6
PRESSURE SOL.
2
P6
+ B
3
P19
STOP
6
P13
REC TIMING PULSE
3
P13
2
PAUSE TIMING
P13
STILL 9V
4

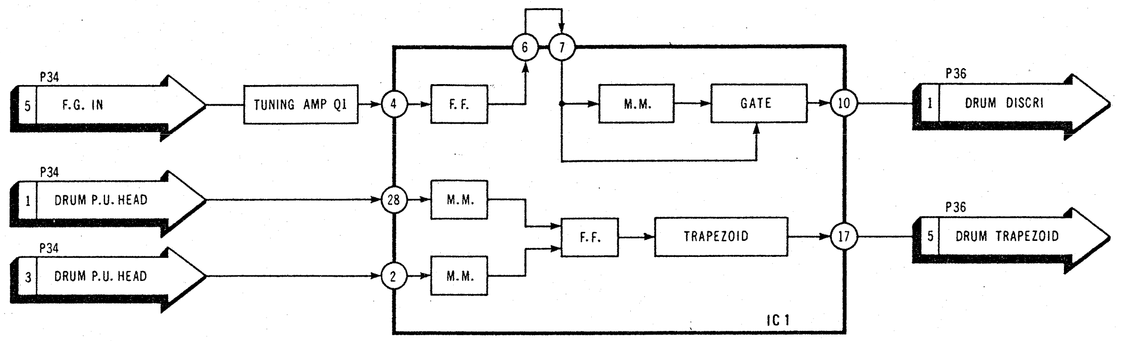
SERVO BLOCK DIAGRAM



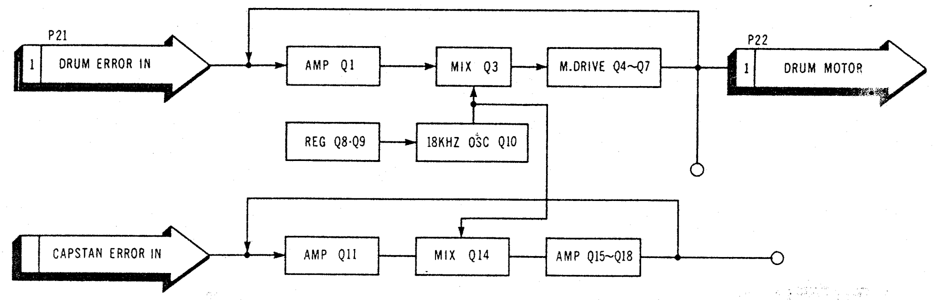
P67
5
DRUM TRAPEZOID
P68
5
STILL 9V
P70
3
V. SYNC IN
AMP Q10
D15
D16
E.SW
TR9
RECTIFIER D12·D13
L.P.F.
R68~R71
C44~C46
RING 9V
P66
5
VIDEO IN
8
E.SW
5
6
2
IC6
F.R. 9V
D9
16
AMP
15
14
13
12
SYNC SEP
V.SYNC SEP
M.M.
10
AMP
M.M.
OUT
3
2
5
8
9
IC7
REC
2
P
3
CTL. HEAD
NOISE ELIMINATOR
D10, D11
2
CAP.M.
6
7
3
IC8
TRACKING
REC PHASE
ELIMINATE Q12
PULSE AMP Q11


IC 10
INV AMP
2
6
P67
DRUM DISCRI
1
2
IC 11
MIC AMP
6
3
P60
1
DRUM ERROR
BUFFER AMP X20
SAMPLING Q19
S.F. Q17
LOOP FILTER C59, C60
S.F. Q15
PULSE AMP Q13
7
2
REC PHASE M.M.
IC 9
3
TRAPEZOID
IC 5
6
SAMPLING Q7
S.F. Q6
MINATE Q12
SE AMP Q11
IC 1
8
DISCRI
14
6
10
BUFFER AMP Q2
TUNING
TUNING AMP Q1
P52
F.G. IN
1
2
INV AMP
6
IC 4
LOOP FILTER C17, C18
E.SW Q4
E.SW Q3
E.SW Q5
D2
F.R. 9V
D3
D4
D6
D5
P.B.A.R. 9V
TIMING OFF 12V
F.R. 9V
3
2
MIX AMP
6
IC 2
2
AMP
6
IC 3
LOOP FILTER C15, C16
P60
6
CAP. ERROR

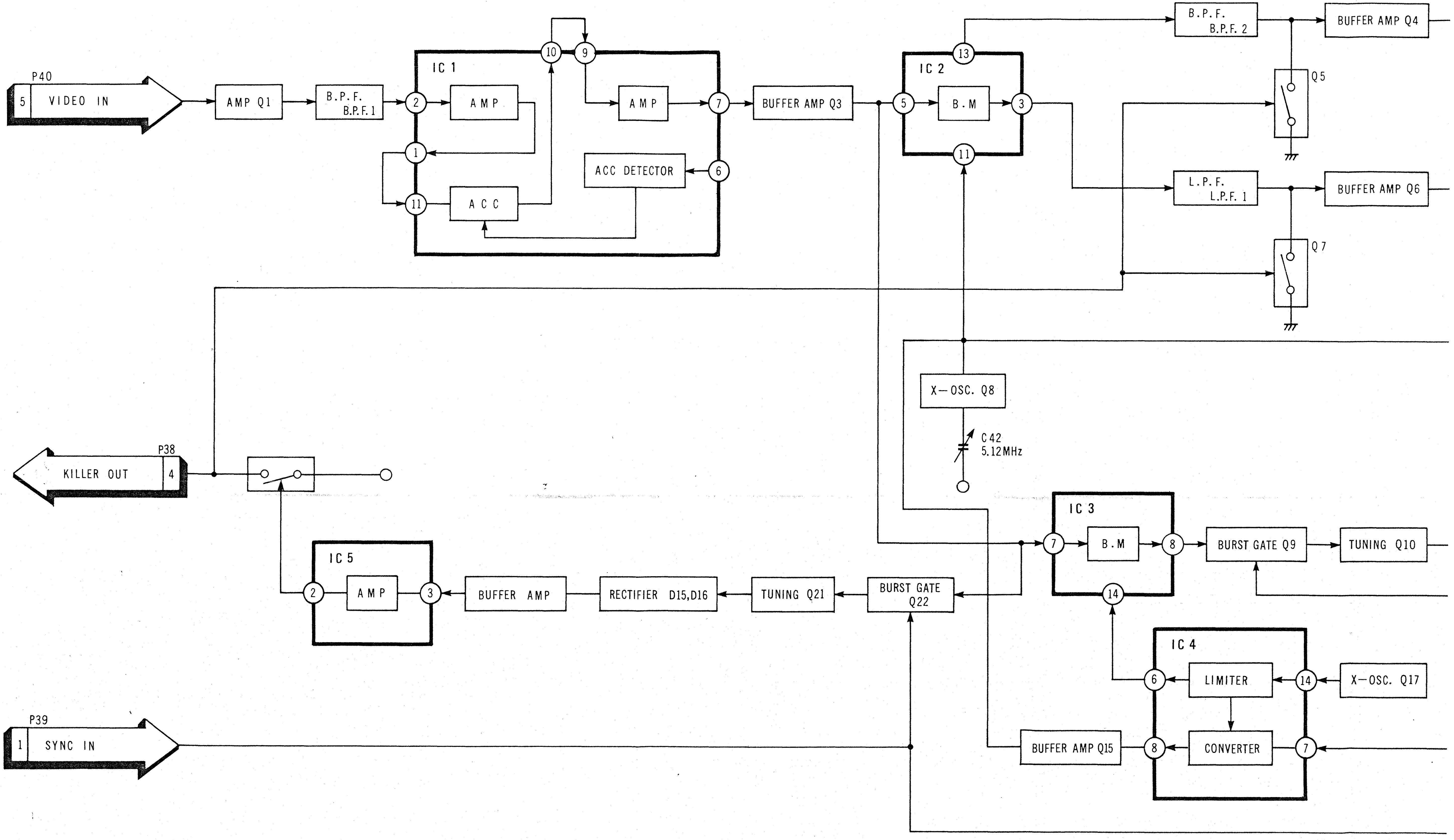
PRE-AMP BLOCK DIAGRAM-(1)

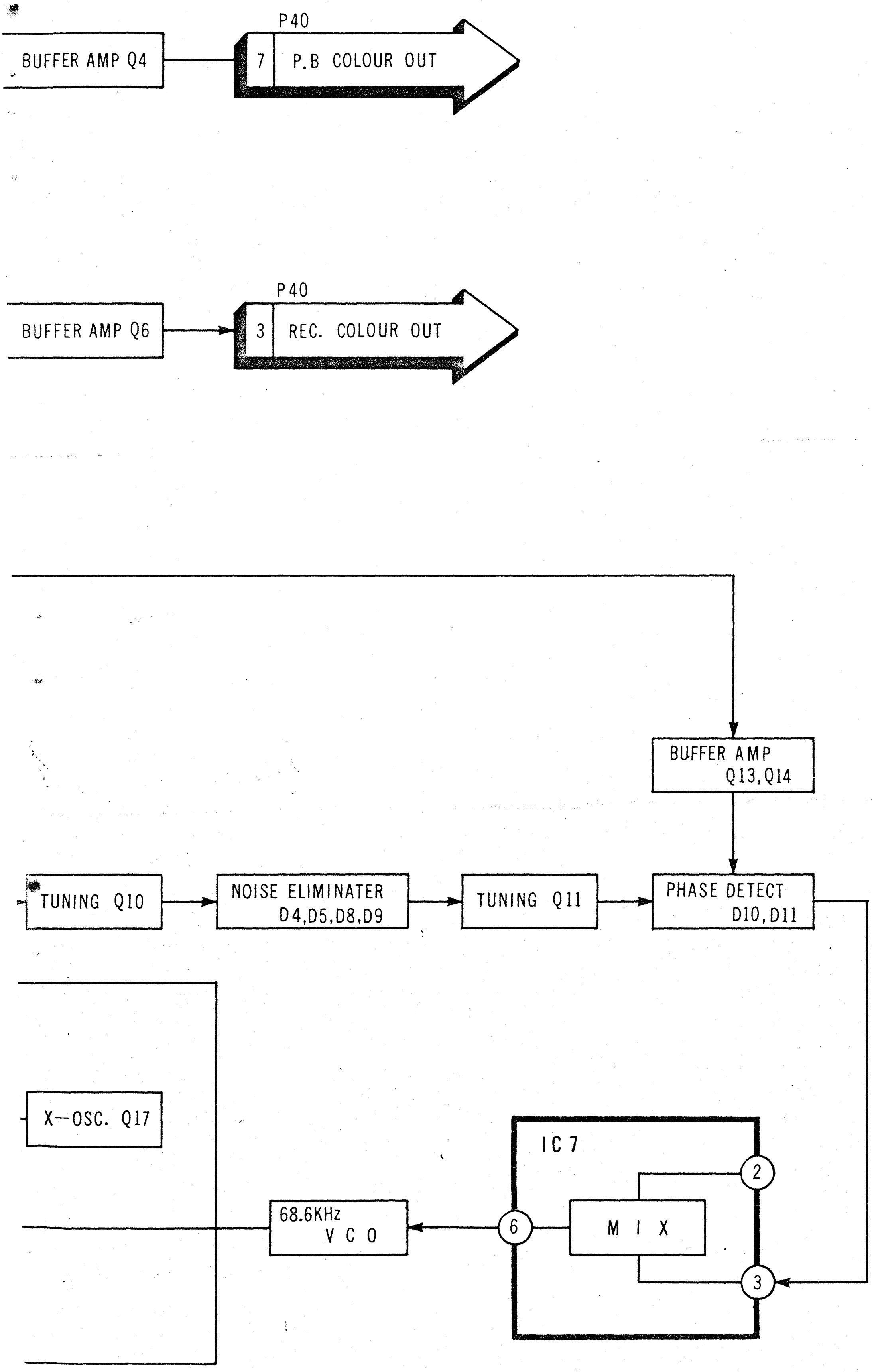

P34
5
F.G. IN
P34
1
DRUM P.U. HEAD
P34
3
DRUM P.U. HEAD
TUNING AMP Q1
4
28
2
6
7
F.F.
M.M.
GATE
M.M.
M.M.
F.F.
TRAPEZOID
IC 1
10
17
P36
1
DRUM DISCRI
P36
5
DRUM TRAPEZOID

MOTOR DRIVE AMP BLOCK DIAGRAM

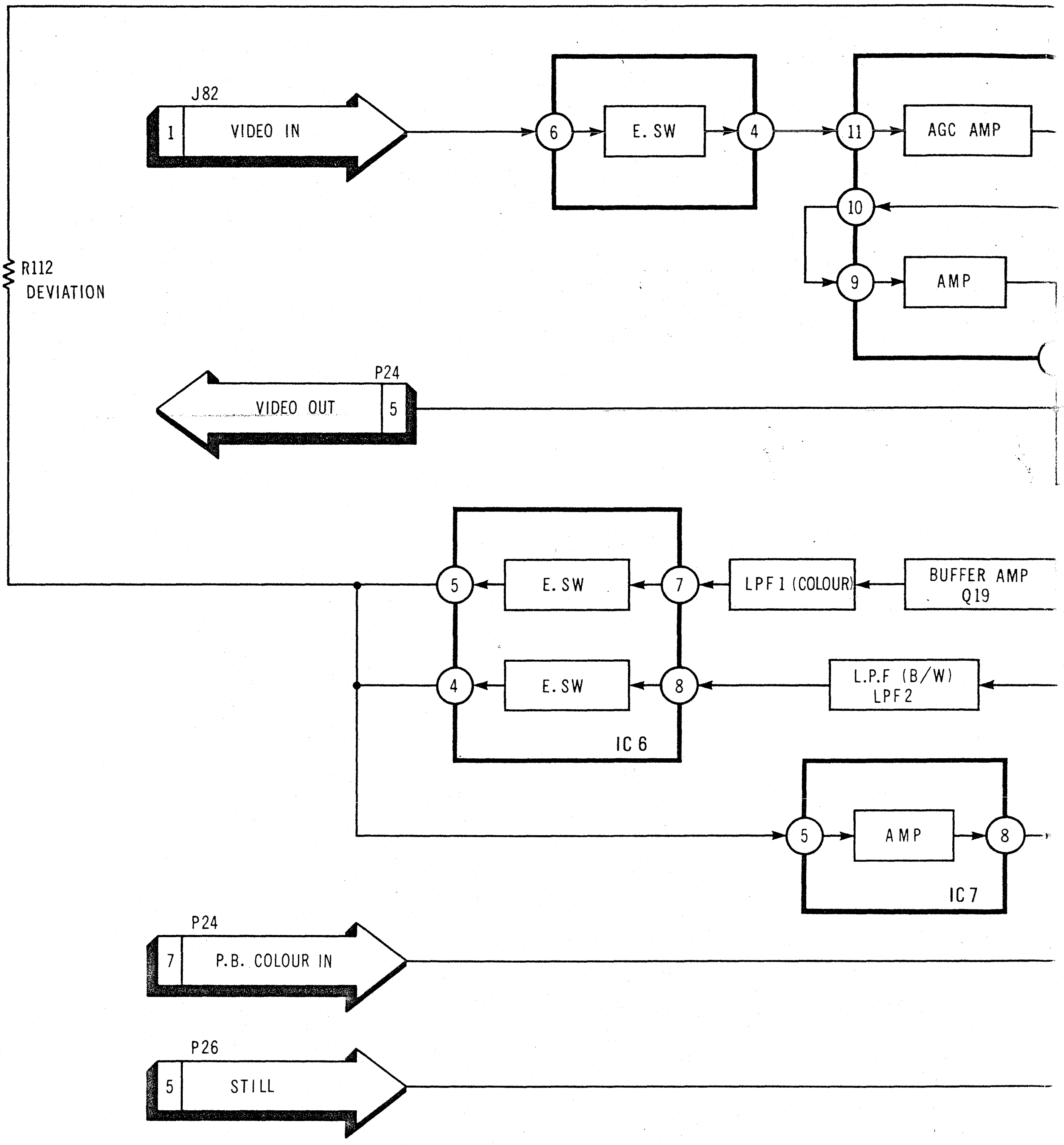

P21
1
DRUM ERROR IN
AMP Q1
MIX Q3
M.DRIVE Q4~Q7
P22
1
DRUM MOTOR
REG Q8·Q9
18KHZ OSC Q10
CAPSTAN ERROR IN
AMP Q11
MIX Q14
AMP Q15~Q18

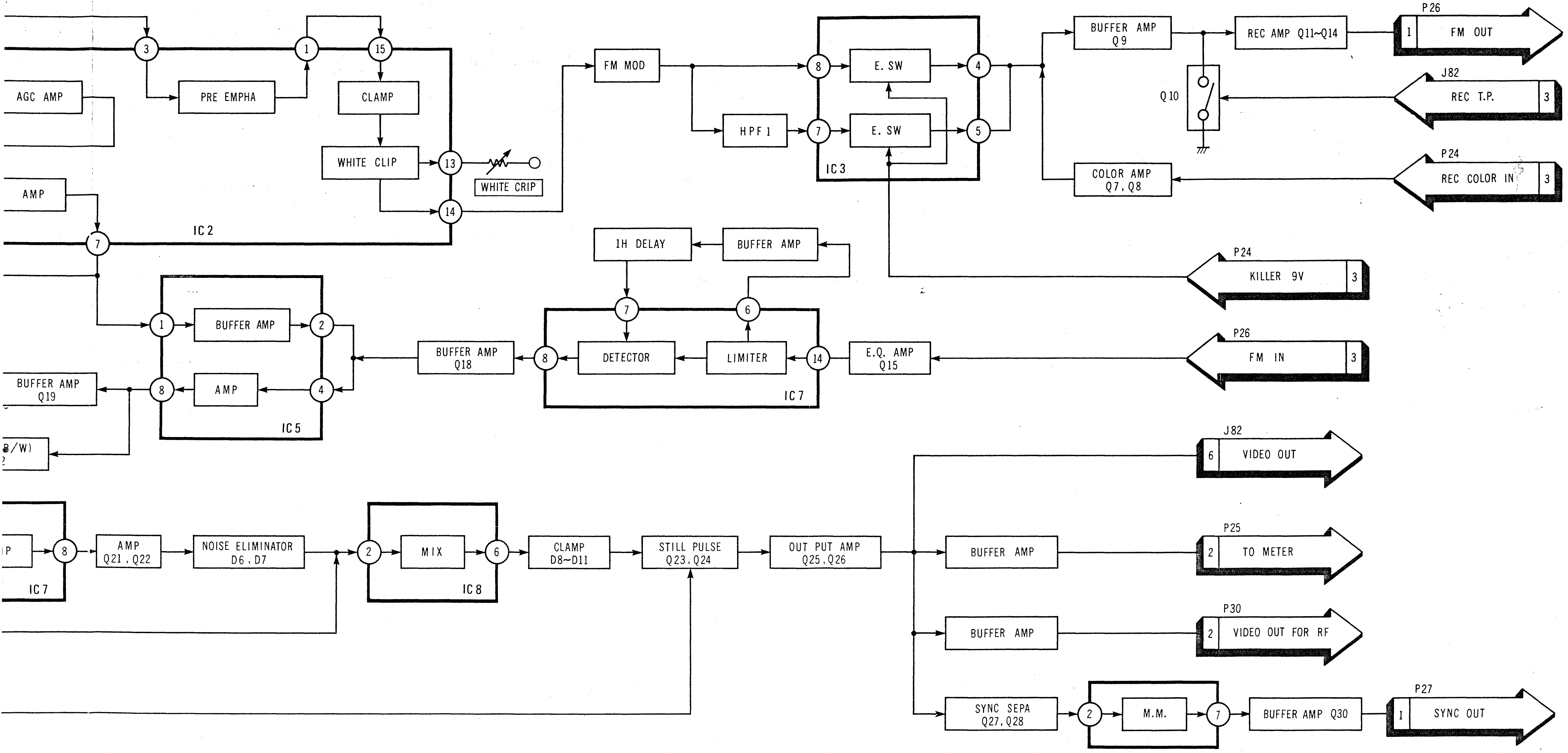
COLOUR BLOCK DIAGRAM


P40
5
VIDEO IN
AMP Q1
B.P.F.
B.P.F. 1
IC 1
10
9
2
AMP
AMP
7
1
ACC DETECTOR
6
11
A C C
BUFFER AMP Q3
IC 2
13
5
B . M
3
11
B.P.F.
B.P.F. 2
BUFFER AMP Q4
Q5
L.P.F.
L.P.F. 1
BUFFER AMP Q6
Q7
X—OSC. Q8
C42
5.12MHz
P38
KILLER OUT
4
IC 3
7
B . M
8
14
BURST GATE Q9
TUNING Q10
IC 5
2
AMP
3
BUFFER AMP
RECTIFIER D15,D16
TUNING Q21
BURST GATE
Q22
IC 4
6
LIMITER
14
X—OSC. Q17
CONVERTER
8
7
BUFFER AMP Q15
P39
1
SYNC IN

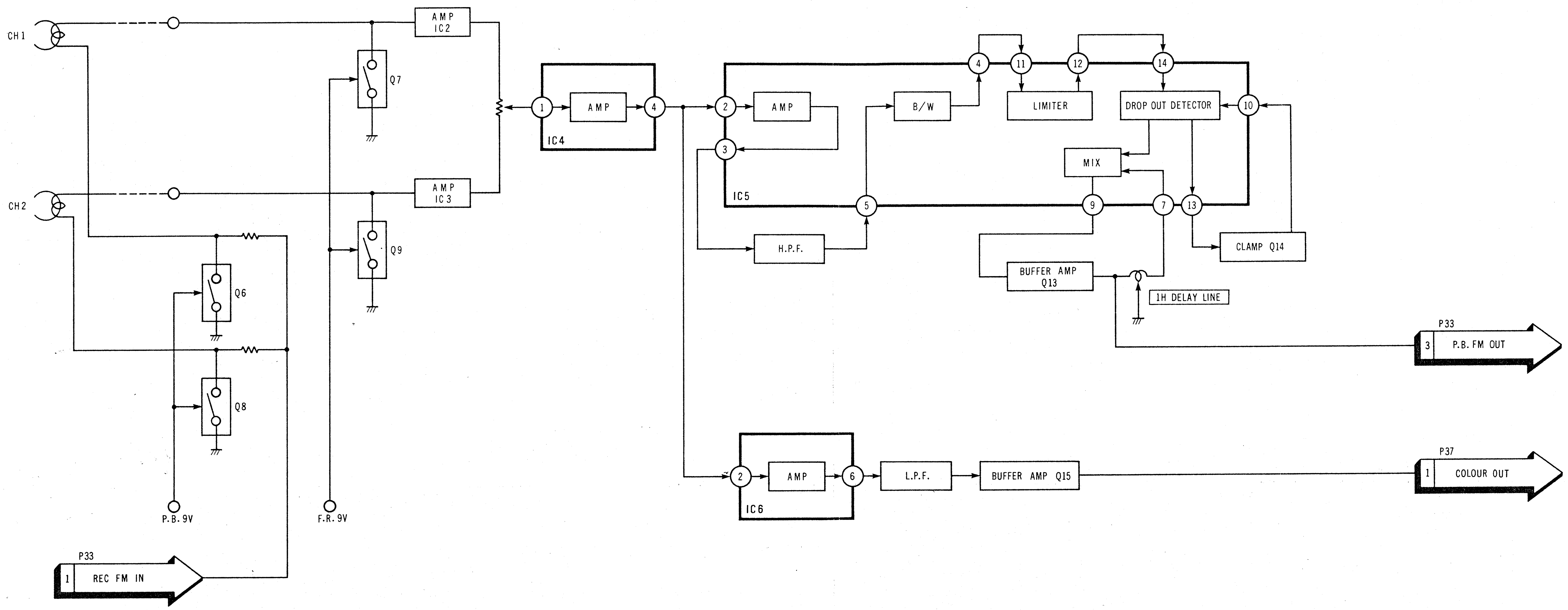

BUFFER AMP Q4
P40
7
P.B COLOUR OUT
BUFFER AMP Q6
P40
3
REC. COLOUR OUT
BUFFER AMP Q13,Q14
TUNING Q10
NOISE ELIMINATER D4,D5,D8,D9
TUNING Q11
PHASE DETECT D10,D11
X-OSC. Q17
IC 7
2
6
M I X
3
68.6KHz V C O

VIDEO BLOCK DIAGRAM

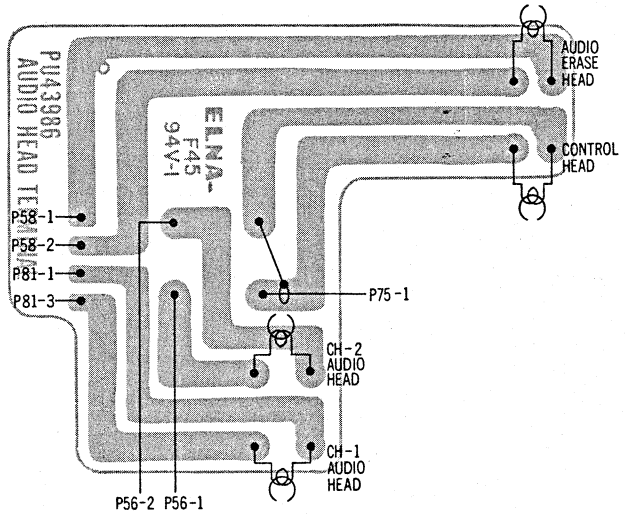

J82
1
VIDEO IN
6
E. SW
4
11
AGC AMP
10
9
AMP
R112
DEVIATION
P24
VIDEO OUT
5
5
E. SW
7
LPF 1 (COLOUR)
BUFFER AMP
Q19
4
E. SW
8
L.P.F (B/W)
LPF 2
IC 6
5
AMP
8
IC 7
P24
7
P.B. COLOUR IN
P26
5
STILL


AGC AMP
PRE EMPHA
CLAMP
WHITE CLIP
WHITE CRIP
AMP
IC 2
FM MOD
HPF 1
E. SW
E. SW
IC 3
BUFFER AMP Q 9
REC AMP Q11~Q14
P 26
1 FM OUT
Q 10
J82
REC T.P. 3
COLOR AMP Q7, Q8
P 24
REC COLOR IN 3
1H DELAY
BUFFER AMP
P 24
KILLER 9V 3
BUFFER AMP
AMP
IC 5
BUFFER AMP Q19
B/W)
BUFFER AMP Q18
DETECTOR
LIMITER
IC 7
E.Q. AMP Q15
P26
FM IN 3
J 82
6 VIDEO OUT
IP
IC 7
AMP Q21, Q22
NOISE ELIMINATOR D6, D7
MIX
IC 8
CLAMP D8~D11
STILL PULSE Q23, Q24
OUT PUT AMP Q25, Q26
BUFFER AMP
P25
2 TO METER
BUFFER AMP
P30
2 VIDEO OUT FOR RF
SYNC SEPA Q27, Q28
M.M.
BUFFER AMP Q30
P27
1 SYNC OUT

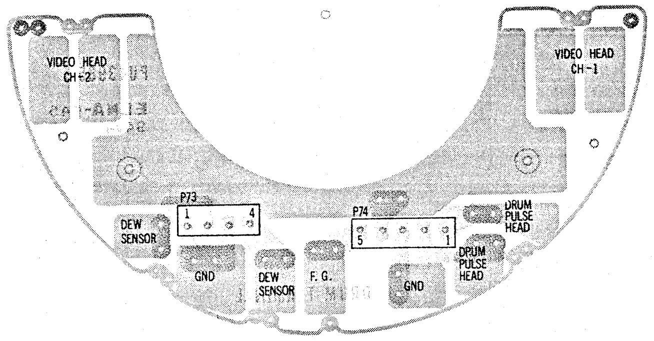
PRE-AMP BLOCK DIAGRAM-(2)


CH1
CH2
AMP IC2
AMP IC3
Q7
Q9
Q6
Q8
P.B.9V
F.R.9V
P33
1 REC FM IN
1
AMP
4
IC4
2
AMP
3
IC5
B/W
4
11
12
14
LIMITER
DROP OUT DETECTOR
10
MIX
5
9
7
13
H.P.F.
CLAMP Q14
BUFFER AMP Q13
1H DELAY LINE
P33
3 P.B.FM OUT
2
AMP
6
IC6
L.P.F.
BUFFER AMP Q15
P37
1 COLOUR OUT

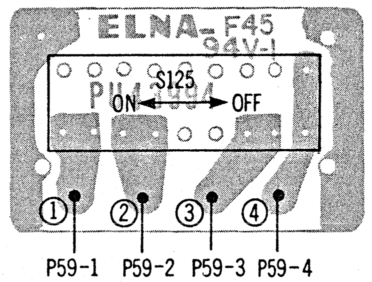
AUDIO HEAD TERMINAL CIRCUIT BOARD (VJB00205)


PU43986
AUDIO HEAD TERMINAL
ELNA-
F45
94V-1
AUDIO
ERASE
HEAD
CONTROL
HEAD
P58-1
P58-2
P81-1
P81-3
P75-1
CH-2
AUDIO
HEAD
CH-1
AUDIO
HEAD
P56-2
P56-1

DRUM TERMINAL CIRCUIT BOARD (VJB00200)


VIDEO HEAD
CH-2
VIDEO HEAD
CH-1
P73
1
4
P74
5
1
DEW
SENSOR
GND
DEW
SENSOR
F. G.
GND
DRUM
PULSE
HEAD
DRUM
PULSE
HEAD

AUDIO LIMITER SW CIRCUIT BOARD (VJB00209)


ELNA-F45
94V-1
PU43994
S125
ON
OFF
①
②
③
④
P59-1
P59-2
P59-3
P59-4

L.E.D CIRCUIT BOARD (VJB00211)

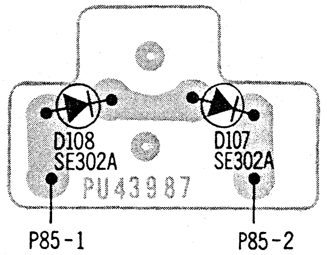
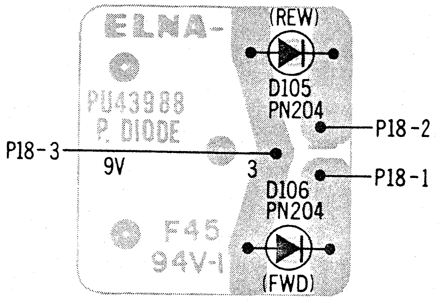
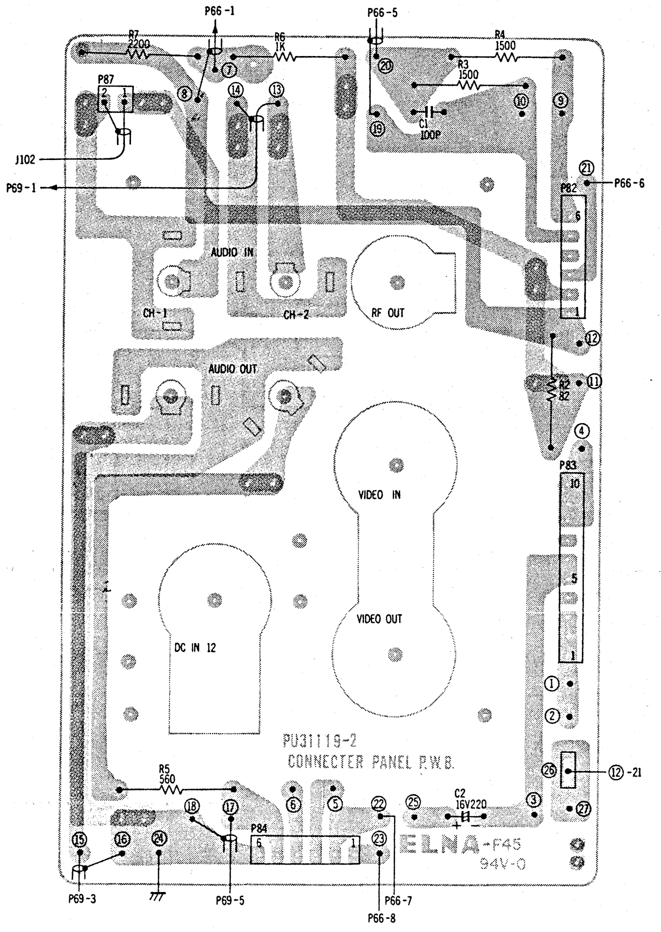

D108
SE302A
D107
SE302A
PU43987
P85-1
P85-2

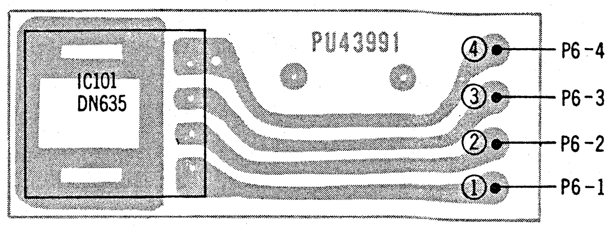
PHOTO DIODE CIRCUIT BOARD (VJB00212)


ELNA-
PU43988
P. DIODE
F45
94V-1
(REW)
D105
PN204
P18-2
P18-3
9V
3
P18-1
D106
PN204
(FWD)

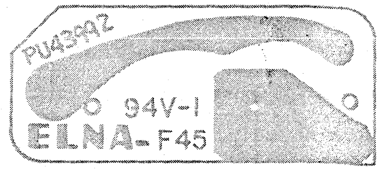
CONNECTOR PANEL CIRCUIT BOARD (VJB00201)


P66-1
P66-5
R7
2200
R6
1K
R4
1500
R3
1500
C1
100P
P87
2
1
J102
P69-1
⑦
⑧
⑭
⑬
⑳
⑲
⑩
⑨
㉑
P66-6
P82
6
1
AUDIO IN
CH-1
CH-2
RF OUT
AUDIO OUT
⑫
R2
82
⑪
④
P83
10
5
1
VIDEO IN
VIDEO OUT
DC IN 12
①
②
PU31119-2
CONNECTER PANEL P.W.B.
㉖
⑫-21
R5
560
⑱
⑰
⑥
⑤
㉒
㉕
C2
16V220
③
㉗
⑮
⑯
㉔
P84
6
1
㉓
ELNA-F45
94V-0
P69-3
P69-5
P66-7
P66-8

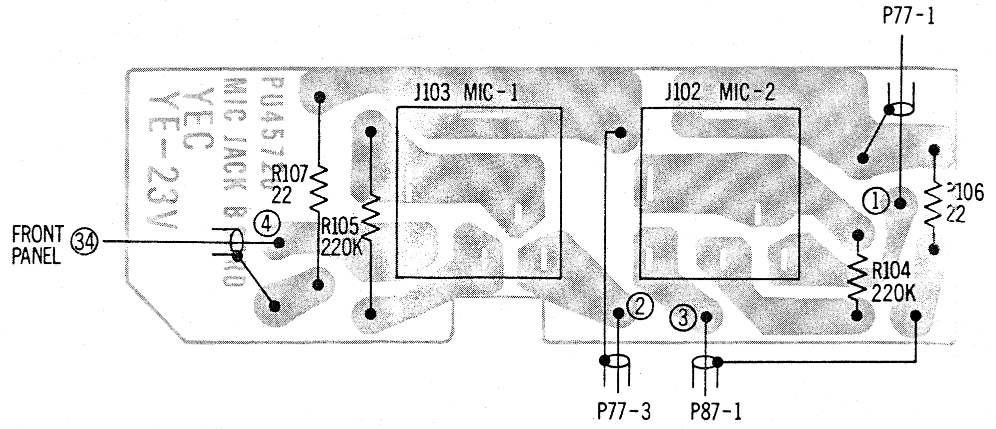
REEL DETECT CIRCUIT BOARD (VJB00207)


IC101
DN635
PU43991
④
P6-4
③
P6-3
②
P6-2
①
P6-1

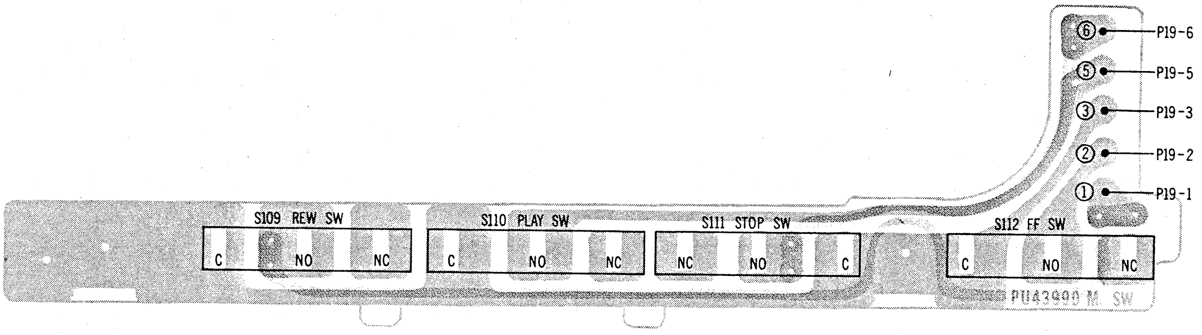
FG TERMINAL CIRCUIT BOARD (VJB00208)


PU43992
94V-I
ELNA-F45

MIC JACK CIRCUIT BOARD (VJB00210)

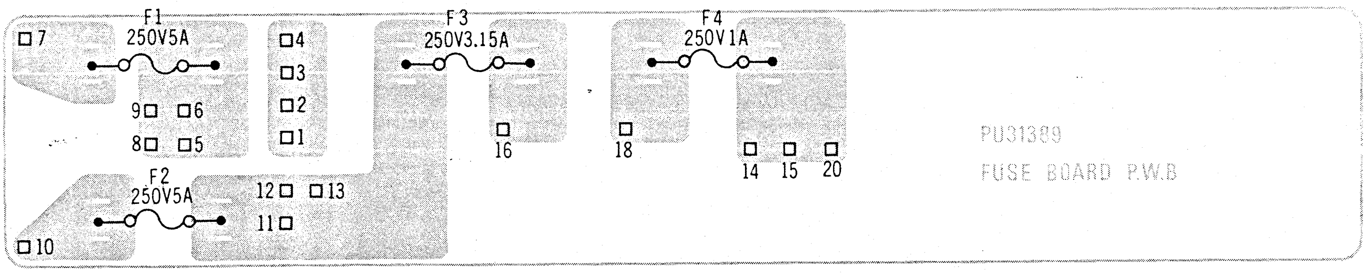

PU45720
MIC JACK B
YEC
YE-23V
P77-1
J103 MIC-1
J102 MIC-2
R107
22
R105
220K
④
FRONT
PANEL
㉞
①
R106
22
R104
220K
②
③
P77-3
P87-1

MICRO SW CIRCUIT BOARD (VJB00206)



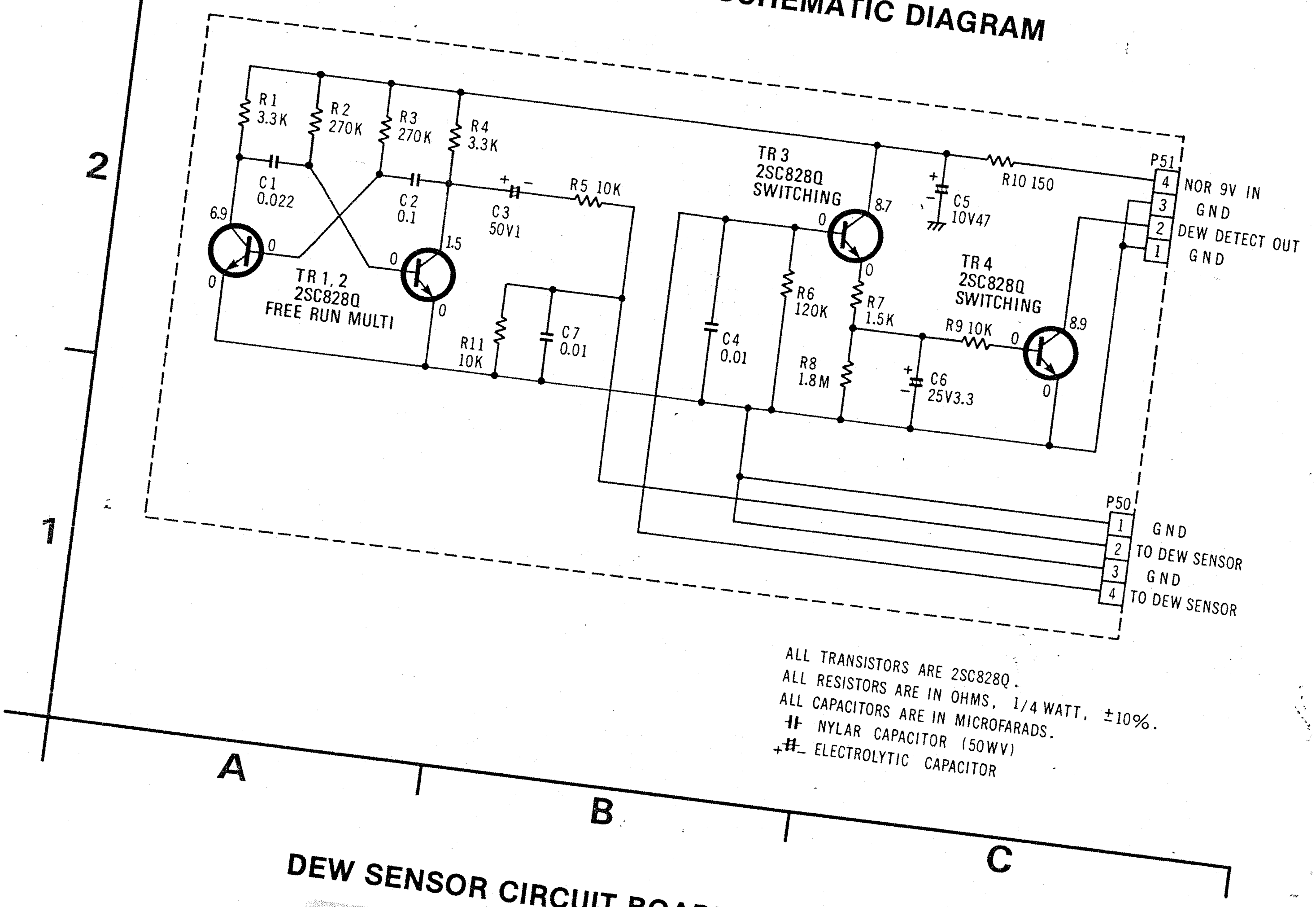
⑥ P19-6
⑤ P19-5
③ P19-3
② P19-2
① P19-1
S109 REW SW
C
NO
NC
S110 PLAY SW
C
NO
NC
S111 STOP SW
NC
NO
C
S112 FF SW
C
NO
NC
PU43990 M. SW

FUSE CIRCUIT BOARD (VJB00202)



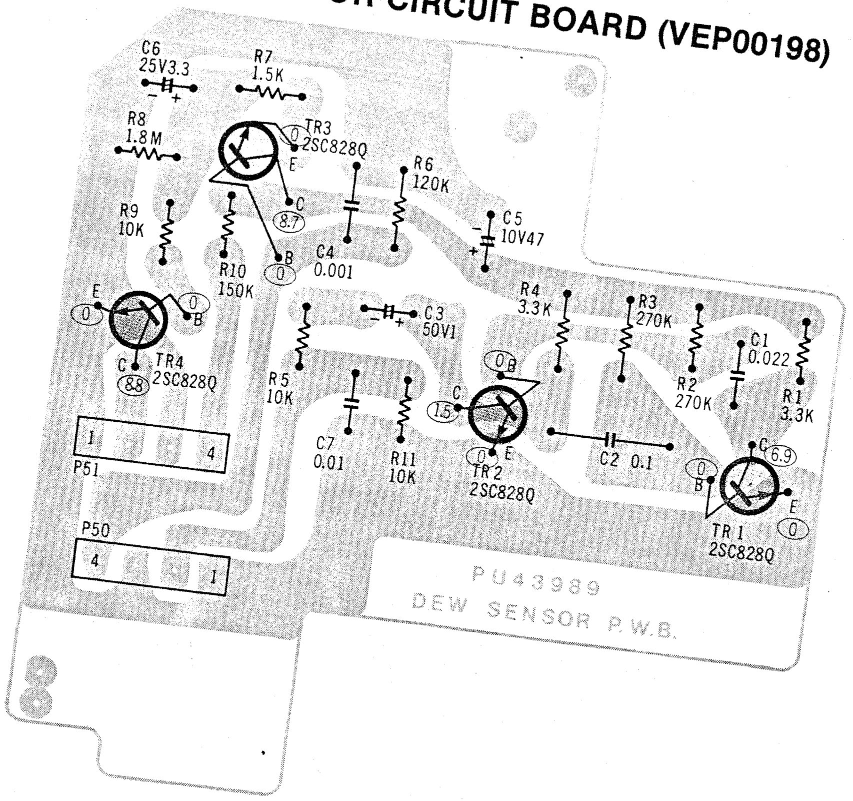
7
F1
250V5A
9
6
8
5
4
3
2
1
F3
250V3.15A
16
F4
250V1A
18
14
15
20
F2
250V5A
10
12
13
11
PU31389
FUSE BOARD P.W.B

DEW SENSOR CIRCUIT SCHEMATIC DIAGRAM

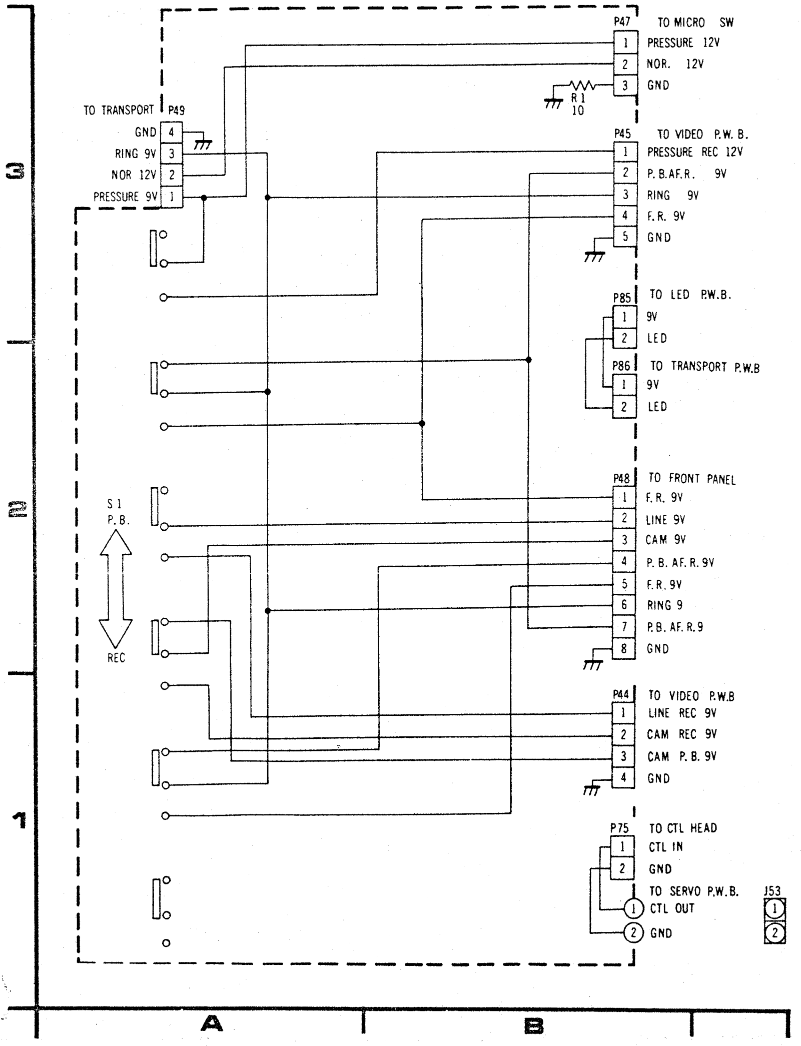

2
1
A
B
C
R1 3.3K
R2 270K
R3 270K
R4 3.3K
C1 0.022
C2 0.1
C3 50V1
R5 10K
6.9
0
0
0
1.5
0
TR 1, 2 2SC828Q FREE RUN MULTI
R11 10K
C7 0.01
TR3 2SC828Q SWITCHING
8.7
0
0
C5 10V47
R10 150
C4 0.01
R6 120K
R7 1.5K
R8 1.8M
C6 25V3.3
TR4 2SC828Q SWITCHING
R9 10K
0
8.9
0
P51
4 NOR 9V IN
3 GND
2 DEW DETECT OUT
1 GND
P50
1 GND
2 TO DEW SENSOR
3 GND
4 TO DEW SENSOR

ALL TRANSISTORS ARE 2SC828Q.
ALL RESISTORS ARE IN OHMS, 1/4 WATT, ±10%.
ALL CAPACITORS ARE IN MICROFARADS.
⊣⊢ NYLAR CAPACITOR (50WV)
+⊣⊢– ELECTROLYTIC CAPACITOR

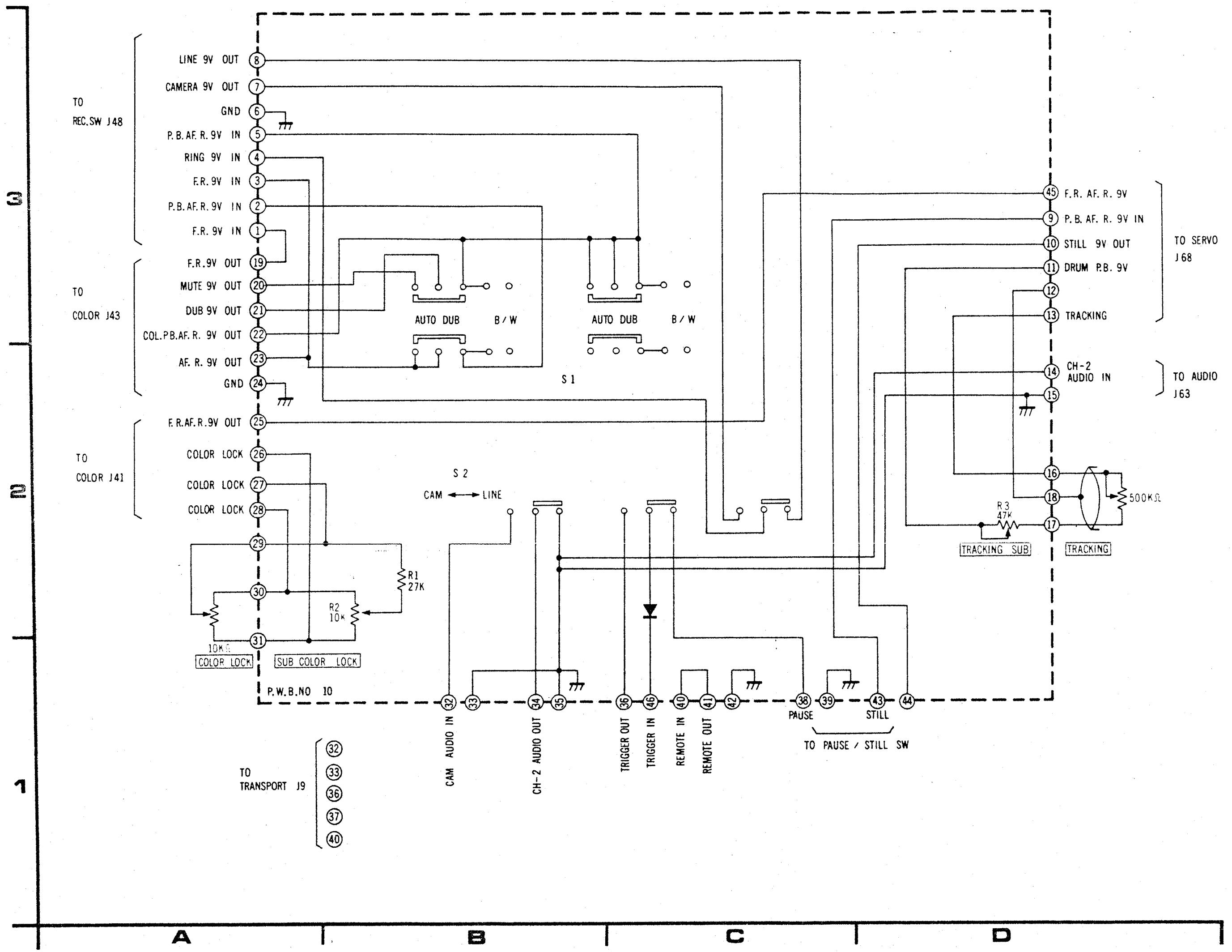
DEW SENSOR CIRCUIT BOARD (VEP00198)


C6 25V3.3
R7 1.5K
R8 1.8M
TR3 2SC828Q
0
E
C
8.7
B
0
R6 120K
C5 10V47
R9 10K
R10 150K
C4 0.001
E
0
0
B
C
8.8
TR4 2SC828Q
C3 50V1
R4 3.3K
R3 270K
C1 0.022
R2 270K
R1 3.3K
R5 10K
C7 0.01
R11 10K
C
1.5
0
B
0
E
TR2 2SC828Q
C2 0.1
0
B
C
6.9
E
0
TR1 2SC828Q
1
4
P51
P50
4
1
PU43989
DEW SENSOR P.W.B.

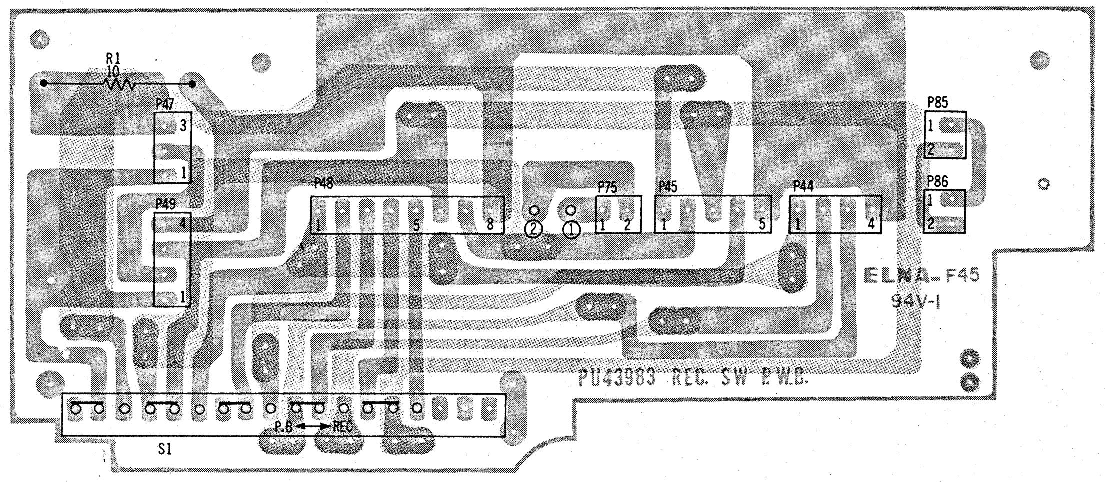
RECORD SW CIRCUIT SCHEMATIC DIAGRAM


P47 TO MICRO SW
1 PRESSURE 12V
2 NOR. 12V
3 GND
R1 10
TO TRANSPORT P49
GND 4
RING 9V 3
NOR 12V 2
PRESSURE 9V 1
P45 TO VIDEO P.W.B.
1 PRESSURE REC 12V
2 P.B.AF.R. 9V
3 RING 9V
4 F.R. 9V
5 GND
P85 TO LED P.W.B.
1 9V
2 LED
P86 TO TRANSPORT P.W.B
1 9V
2 LED
S1 P.B.
REC
P48 TO FRONT PANEL
1 F.R. 9V
2 LINE 9V
3 CAM 9V
4 P.B. AF.R. 9V
5 F.R. 9V
6 RING 9
7 P.B. AF.R.9
8 GND
P44 TO VIDEO P.W.B
1 LINE REC 9V
2 CAM REC 9V
3 CAM P.B. 9V
4 GND
P75 TO CTL HEAD
1 CTL IN
2 GND
TO SERVO P.W.B.
① CTL OUT
② GND
J53
1
2
3
2
1
A
B

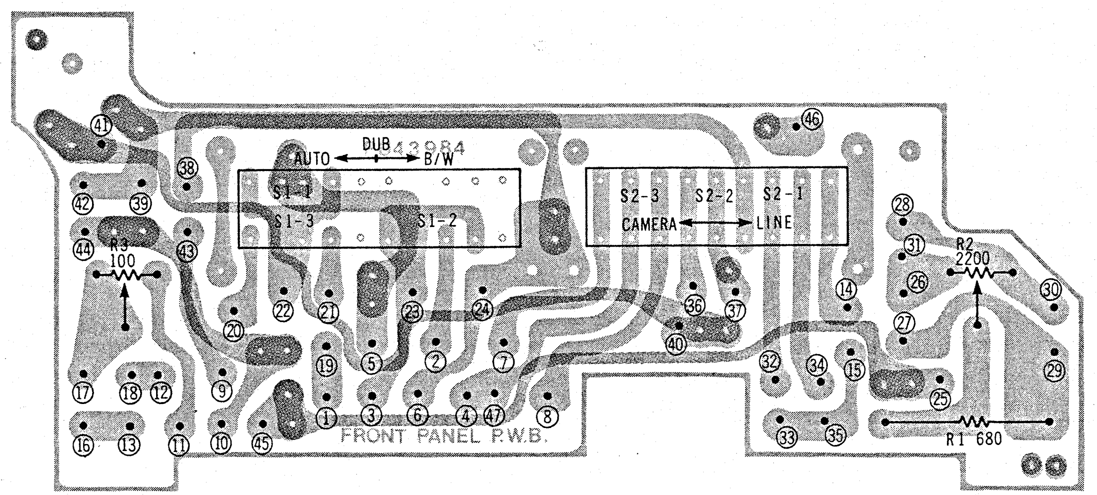
FRONT PANEL CIRCUIT SCHEMATIC DIAGRAM


TO REC.SW J48
LINE 9V OUT ⑧
CAMERA 9V OUT ⑦
GND ⑥
P.B.AF.R.9V IN ⑤
RING 9V IN ④
F.R.9V IN ③
P.B.AF.R.9V IN ②
F.R.9V IN ①
TO COLOR J43
F.R.9V OUT ⑲
MUTE 9V OUT ⑳
DUB 9V OUT ㉑
COL.P.B.AF.R. 9V OUT ㉒
AF. R. 9V OUT ㉓
GND ㉔
TO COLOR J41
F.R.AF.R.9V OUT ㉕
COLOR LOCK ㉖
COLOR LOCK ㉗
COLOR LOCK ㉘
㉙
㉚
㉛
AUTO DUB B/W
AUTO DUB B/W
S1
S2
CAM ⟵⟶ LINE
R1 27K
R2 10K
10K
COLOR LOCK
SUB COLOR LOCK
P.W.B.NO 10
㊺ F.R. AF. R. 9V
⑨ P.B. AF. R. 9V IN
⑩ STILL 9V OUT
⑪ DRUM P.B. 9V
⑫
⑬ TRACKING
TO SERVO J68
⑭ CH-2 AUDIO IN
⑮
TO AUDIO J63
⑯
⑱
⑰
R3 47
500KΩ
TRACKING SUB
TRACKING
㉜ CAM AUDIO IN
㉝
㉞ CH-2 AUDIO OUT
㉟
㊱ TRIGGER OUT
㊻ TRIGGER IN
㊵ REMOTE IN
㊶ REMOTE OUT
㊷
㊳ PAUSE
㊴
㊸ STILL
㊹
TO PAUSE / STILL SW
TO TRANSPORT J9
㉜
㉝
㊱
㊲
㊵
3
2
1
A
B
C
D

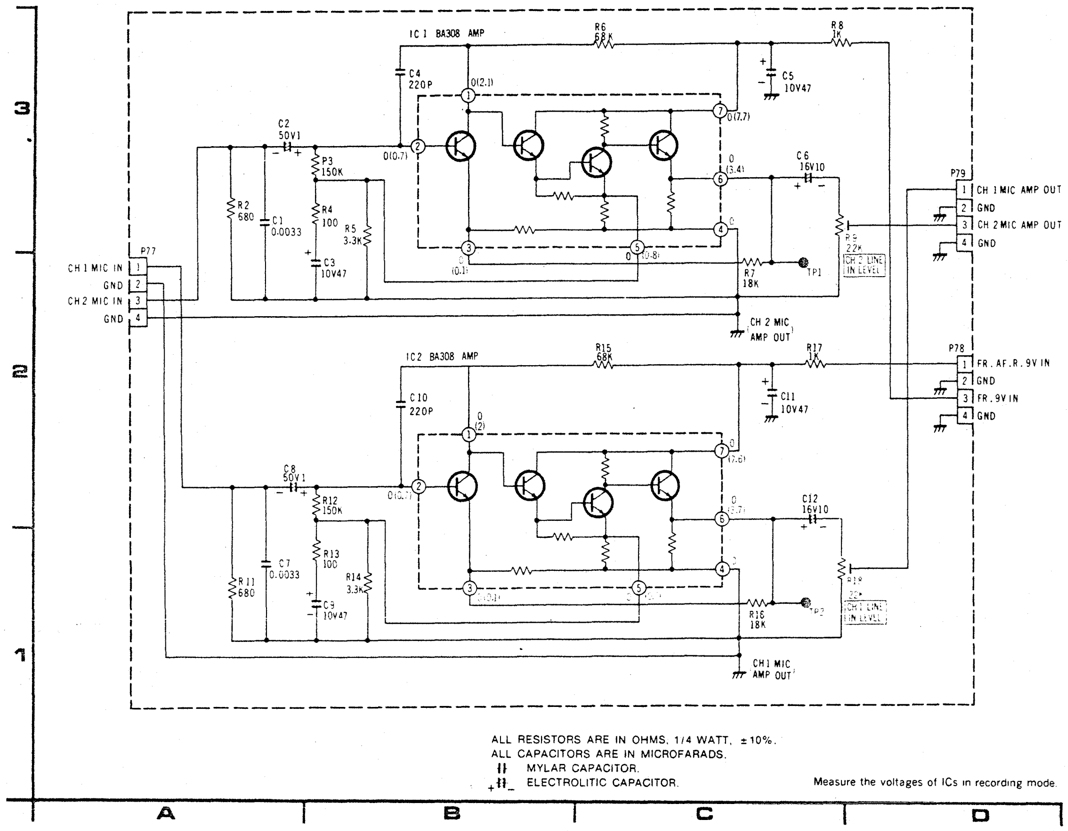
RECORD SW CIRCUIT BOARD (VJB00203)


R1 10
P47
3
1
P49
4
1
P48
1
5
8
②
①
P75
1 2
P45
1
5
P44
1
4
P85
1
2
P86
1
2
ELNA-F45
94V-I
PU43983 REC. SW P.W.B.
P.B ⟵⟶ REC
S1

FRONT PANEL CIRCUIT BOARD (VJB00204)


43984
AUTO ⟵ DUB ⟶ B/W
S1-1
S1-3
S1-2
S2-3
S2-2
S2-1
CAMERA ⟵⟶ LINE
R3 100
R2 2200
R1 680
FRONT PANEL P.W.B.
㊶
㊷
㊹
㊳
㊴
㊸
㊻
㉘
㉛
㉖
㉚
㉗
㉙
㉕
⑳
㉒
㉑
㉓
㉔
㊱
㊲
㊵
⑭
㉜
㉞
⑮
⑲
⑤
②
⑦
⑨
①
③
⑥
④
㊼
⑧
⑰
⑱
⑫
⑯
⑬
⑪
⑩
㊺
㉝
㉟

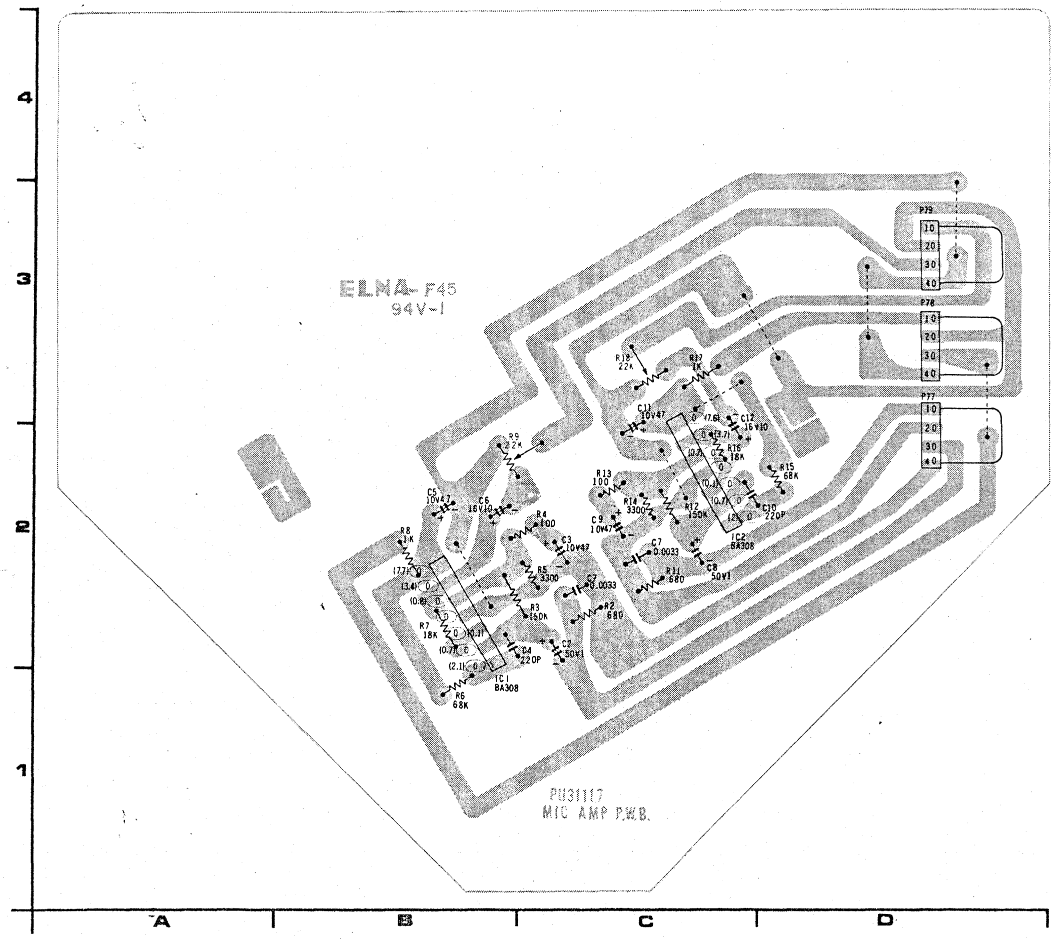
MIC AMP CIRCUIT SCHEMATIC DIAGRAM


IC1 BA308 AMP
R6 68K
R8 1K
C4 220P
C5 10V47
C2 50V1
P3 150K
R2 680
C1 0.0033
R4 100
R5 3.3K
C3 10V47
C6 16V10
R9 22K
CH 2 LINE IN LEVEL
R7 18K
TP1
P77
CH 1 MIC IN
GND
CH 2 MIC IN
GND
CH 2 MIC AMP OUT
P79
CH 1 MIC AMP OUT
GND
CH 2 MIC AMP OUT
GND
IC2 BA308 AMP
R15 68K
R17 1K
P78
FR. AF. R. 9V IN
GND
FR. 9V IN
GND
C10 220P
C11 10V47
C8 50V1
R12 150K
R13 100
C7 0.0033
R11 680
R14 3.3K
C9 10V47
C12 16V10
R18 22K
CH 1 LINE IN LEVEL
R16 18K
TP2
CH 1 MIC AMP OUT
3
2
1
A
B
C
D

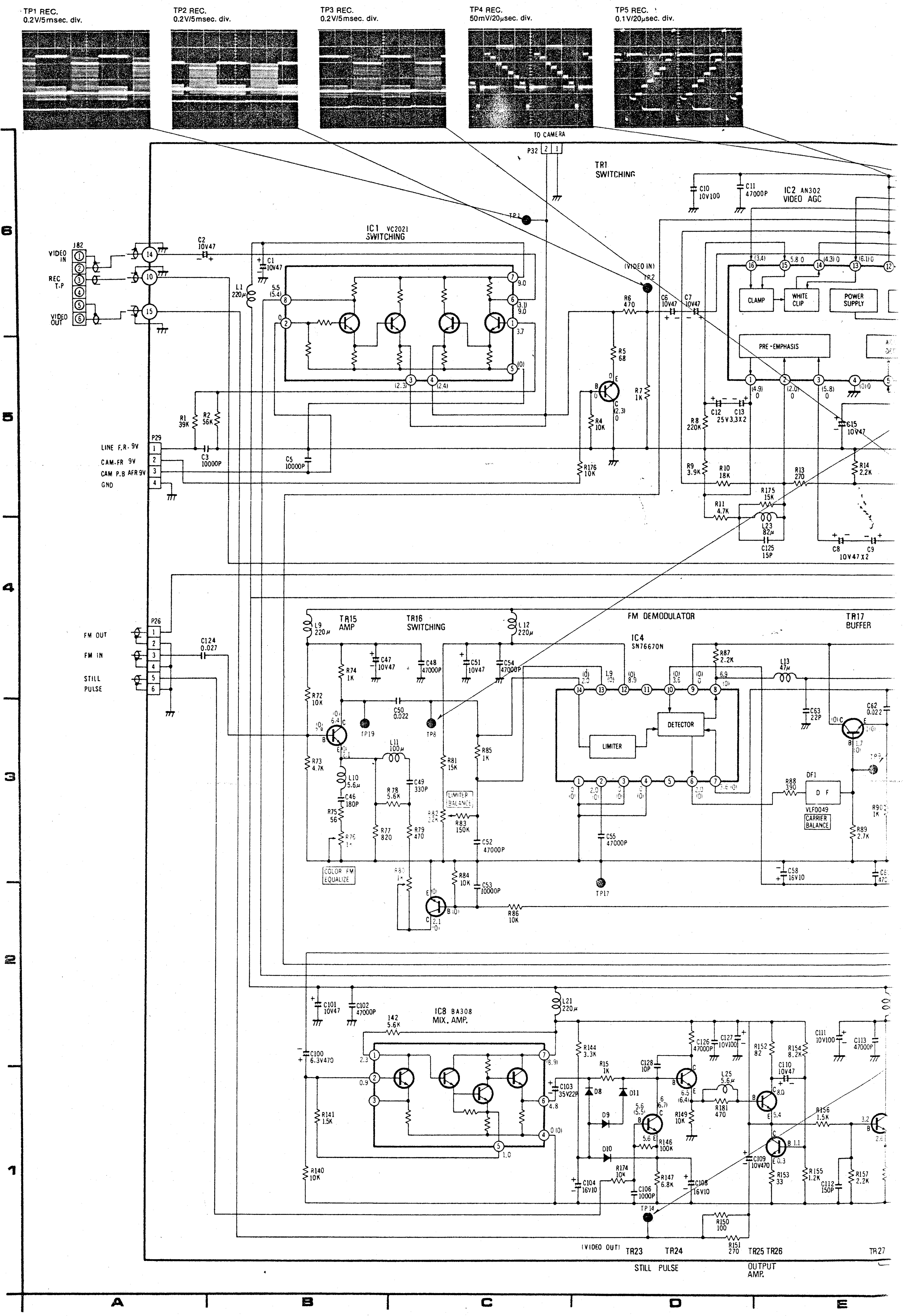
ALL RESISTORS ARE IN OHMS, 1/4 WATT, ±10%.
ALL CAPACITORS ARE IN MICROFARADS.
⊣⊢ MYLAR CAPACITOR.
+⊣⊢_ ELECTROLITIC CAPACITOR.

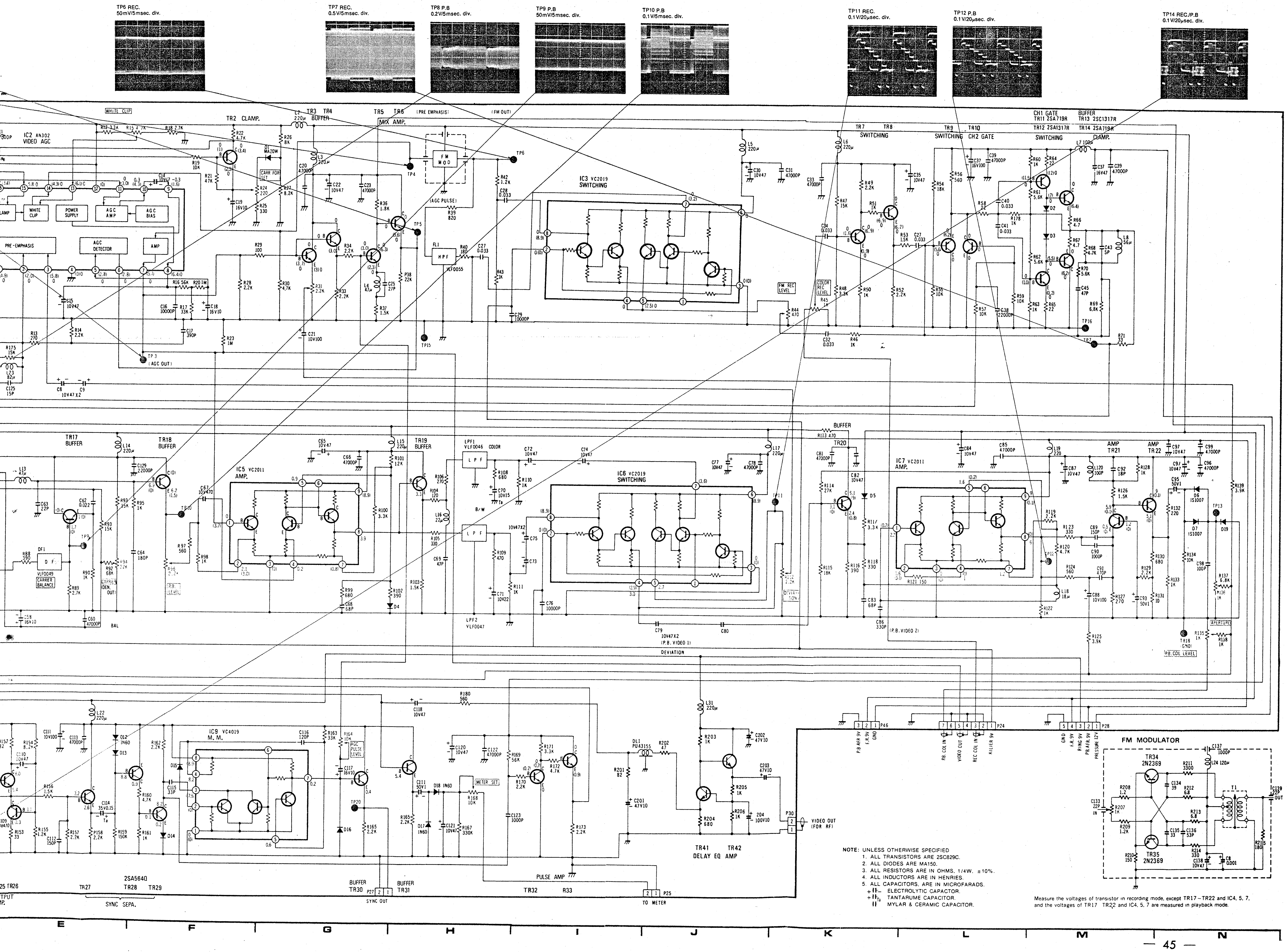
Measure the voltages of ICs in recording mode.

MIC AMP CIRCUIT BOARD (VEP0436B1)


ELNA F45
94V-1
P79
P78
P77
R18 22K
R17 1K
C11 10V47
C12 16V10
R16 18K
R15 68K
R9 22K
C5 10V47
C6 16V10
R4 100
R13 100
R14 3300
R12 150K
C10 220P
C9 10V47
IC2 BA308
C3 10V47
C7 0.0033
C8 50V1
R11 680
R8 1K
R5 3300
C1 0.0033
R2 680
R3 150K
R7 18K
C4 220P
C2 50V1
IC1 BA308
R6 68K
PU31117
MIC AMP P.W.B.
4
3
2
1
A
B
C
D

VIDEO CIRCUIT SCHEMATIC DIAGRAM

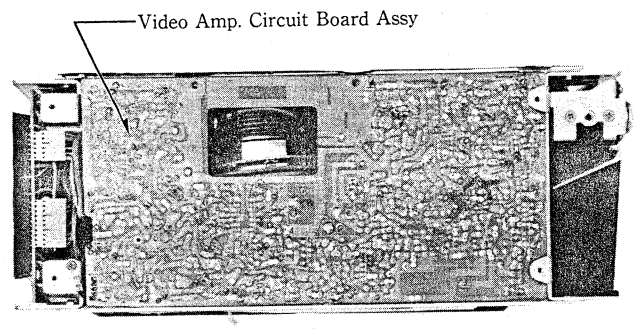

TP1 REC.
0.2V/5msec. div.
TP2 REC.
0.2V/5msec. div.
TP3 REC.
0.2V/5msec. div.
TP4 REC.
50mV/20μsec. div.
TP5 REC.
0.1V/20μsec. div.
TO CAMERA
P32
TR1
SWITCHING
C10
10V100
C11
47000P
IC2 AN302
VIDEO AGC
J82
VIDEO IN
REC T.P
VIDEO OUT
C2
10V47
C1
10V47
IC1 VC2021
SWITCHING
L1
220μ
(VIDEO IN)
TP1
TP2
R6
470
C6
10V47
C7
10V47
CLAMP
WHITE CLIP
POWER SUPPLY
PRE-EMPHASIS
R5
68
R7
1K
R4
10K
R1
39K
R2
56K
C12
C13
25V3.3X2
R8
220K
C15
10V47
P29
LINE F.R. 9V
CAM.FR 9V
CAM P.B AFR 9V
GND
C3
10000P
C5
10000P
R176
10K
R9
3.9K
R10
18K
R13
270
R14
2.2K
R11
4.7K
R175
15K
L23
82μ
C125
15P
C8
C9
10V47X2
P26
FM OUT
FM IN
STILL PULSE
C124
0.027
L9
220μ
TR15
AMP
TR16
SWITCHING
L12
220μ
FM DEMODULATOR
TR17
BUFFER
IC4
SN76670N
C47
10V47
C48
47000P
C51
10V47
C54
47000P
R87
2.2K
L13
47μ
R74
1K
R72
10K
C50
0.022
TP19
TP8
DETECTOR
LIMITER
C63
22P
C62
0.022
R73
4.7K
L11
100μ
L10
5.6μ
C46
180P
C49
330P
R81
15K
R85
1K
R78
5.6K
LIMITER BALANCE
R82
R83
150K
R88
390
DF1
D F
VLF0049
CARRIER BALANCE
R89
2.7K
R75
56
R76
1K
COLOR FM EQUALIZE
R77
820
R79
470
C52
47000P
C55
47000P
C58
16V10
R80
1K
R84
10K
C53
10000P
TP17
R86
10K
C101
10V47
C102
47000P
R142
5.6K
IC8 BA308
MIX. AMP.
L21
220μ
C100
6.3V470
C103
35V22P
R144
3.3K
R15
1K
C128
10P
C126
47000P
C127
10V100
R152
82
R154
8.2K
C111
10V100
C113
47000P
C110
10V47
L25
5.6μ
D8
D11
D9
D10
R141
1.5K
R181
470
R149
10K
R146
100K
R156
1.5K
R140
10K
C104
16V10
R174
10K
C106
1000P
R147
6.8K
C108
16V10
C109
10V470
R153
33
R155
1.2K
C112
150P
R157
2.2K
TP14
R150
100
R151
270
(VIDEO OUT)
TR23
TR24
STILL PULSE
TR25 TR26
OUTPUT AMP.
TR27
A
B
C
D
E
1
2
3
4
5
6

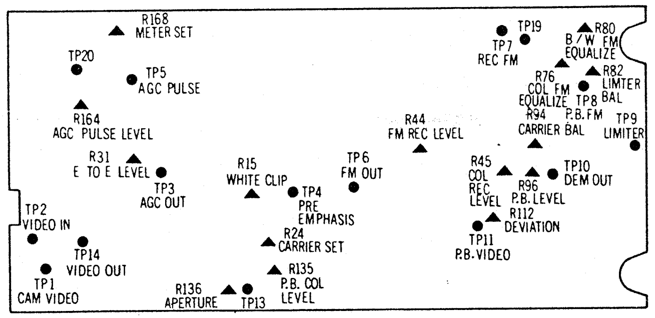

TP6 REC. 50mV/5msec. div.
TP7 REC. 0.5V/5msec. div.
TP8 P.B 0.2V/5msec. div.
TP9 P.B 50mV/5msec. div.
TP10 P.B 0.1V/5msec. div.
TP11 REC. 0.1V/20μsec. div.
TP12 P.B 0.1V/20μsec. div.
TP14 REC/P.B 0.1V/20μsec. div.
IC2 AN302 VIDEO AGC
WHITE CLIP
TR2 CLAMP.
TR3 TR4 BUFFER
TR5 TR6 MIX AMP.
(PRE EMPHASIS)
(FM OUT)
FM MOD
PRE-EMPHASIS
AGC DETECTOR
AGC AMP
AGC BIAS
POWER SUPPLY
CARR FOR SET
(AGC PULSE)
HPF
VLF0055
IC3 VC2019 SWITCHING
FM REC LEVEL
COLOR REC LEVEL
TR7 TR8 SWITCHING
TR9 TR10 SWITCHING CH2 GATE
CH1 GATE TR11 2SA719R
TR12 2SA1317R
SWITCHING
BUFFER TR13 2SC1317R
TR14 2SA719R CLAMP.
TP3 (AGC OUT)
TP4
TP5
TP6
TP7
TP15
TP16
TR17 BUFFER
TR18 BUFFER
IC5 VC2011 AMP.
TR19 BUFFER
LPF1 VLF0046 COLOR
B/W
LPF2 VLF0047
IC6 VC2019 SWITCHING
BUFFER TR20
IC7 VC2011 AMP.
AMP TR21
AMP TR22
DF1 VLF0049
CARRIER BALANCE
CARRIER IDEN. OUT
FM LEVEL
DEVIATION
(P.B. VIDEO 1)
(P.B. VIDEO 2)
APERTURE
P.B. COL LEVEL
TR18 GND
TP8
TP9
TP10
TP11
TP12
TP13
IC9 VC4019 M.M.
AGC PULSE LEVEL
METER SET
TP20
TR41 TR42 DELAY EQ AMP
DL1 PU43155
VIDEO OUT (FOR RF)
P30
P.B AFR 9V
F.R. 9V
GND
P46
P.B COL IN
VIDEO OUT
REC COL IN
KILLER 9V
P24
GND
F.R. 9V
P.B AFR 9V
P.B AFR 9V
PRESSURE 12V
P28
FM MODULATOR
TR34 2N2369
TR35 2N2369
IN
OUT
TR25 TR26
OUTPUT AMP.
TR27
2SA564Q
TR28 TR29
SYNC SEPA.
BUFFER TR30
P27
SYNC OUT
BUFFER TR31
TR32
PULSE AMP
R33
P25
TO METER
E
F
G
H
I
J
K
L
M
N

Video Circuit (VEP0363B1)	
TR1	A-2
TR2	D-2
TR3	C-3
TR4	B-4
TR5	B-4
TR6	B-4
TR7	H-3
TR8	G-3
TR9	G-4
TR10	G-4
TR11	G-4
TR12	F-4
TR13	G-5
TR14	F-5
TR15	H-5
TR16	I-5
TR17	I-3
TR18	I-3
TR19	I-2
TR20	G-2
TR21	F-1
TR22	E-1
TR23	B-1
TR24	C-2
TR25	B-2
TR26	B-2
TR27	A-5
TR28	A-4
TR29	A-4
TR30	B-4
TR31	A-5
TR32	A-3
TR33	A-3
TR41	A-2
TR42	A-2
IC1	A-1
IC2	D-2
IC3	F-3
IC4	I-4
IC5	I-2
IC6	H-2
IC7	F-1
IC8	C-1
IC9	A-3

NOTE: UNLESS OTHERWISE SPECIFIED
1. ALL TRANSISTORS ARE 2SC829C.
2. ALL DIODES ARE MA150.
3. ALL RESISTORS ARE IN OHMS. 1/4W. ±10%.
4. ALL INDUCTORS ARE IN HENRIES.
5. ALL CAPACITORS. ARE IN MICROFARADS.
+|⊢ ELECTROLYTIC CAPACTOR.
+|⊢Ta TANTARUME CAPACITOR.
|⊢ MYLAR & CERAMIC CAPACITOR.

Measure the voltages of transistor in recording mode, except TR17~TR22 and IC4, 5, 7, and the voltages of TR17 TR22 and IC4, 5, 7 are measured in playback mode.


Video Amp. Circuit Board Assy


R168
METER SET
TP20
TP5
AGC PULSE
R164
AGC PULSE LEVEL
R31
E TO E LEVEL
TP3
AGC OUT
TP2
VIDEO IN
TP14
VIDEO OUT
TP1
CAM VIDEO
R136
APERTURE
TP13
R135
P.B. COL
LEVEL
R15
WHITE CLIP
TP4
PRE
EMPHASIS
R24
CARRIER SET
TP6
FM OUT
R44
FM REC LEVEL
TP19
TP7
REC FM
R80
B / W FM
EQUALIZE
R76
COL FM
EQUALIZE
R82
LIMTER
BAL
TP8
P.B.FM
R94
CARRIER BAL
TP9
LIMITER
R45
COL
REC
LEVEL
R96
P.B. LEVEL
TP10
DEM OUT
R112
DEVIATION
TP11
P.B.VIDEO

P24 (Video C.B.A)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	Killer 9V In	P40-1	Colour
2	GND	—	Colour
3	Rec Col In	P40-3	Colour
4	GND	—	Colour
5	Video Out	P40-5	Colour
6	GND	—	Colour
7	P.B Col In	P40-7	Colour

P25 (Video C.B.A)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	GND	—	—
2	Meter (Video)	S121-1-V	

P26 (Video C.B.A)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	Rec FM	P33-1	Pre Amp
2	GND	—	Pre Amp
3	P.B FM	P33-3	Pre Amp
4	GND	—	Pre Amp
5	Still Pulse	P33-5	Pre Amp
6	GND	—	Pre Amp

P27 (Video C.B.A)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	Sync Out	P39-1	Colour
2	GND	—	—

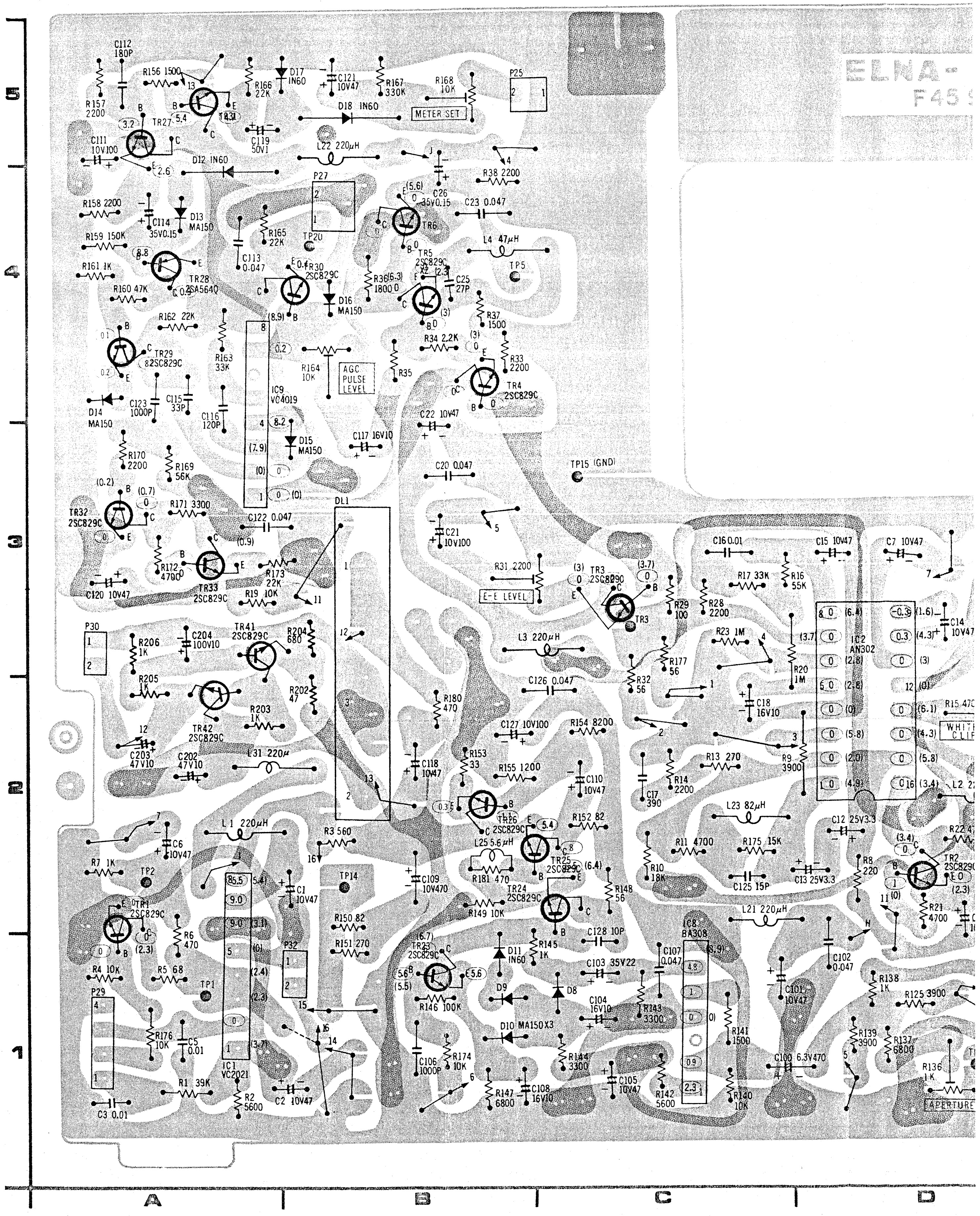
P28 (Video C.B.A)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	Pinch Rec 12V	P45-1	Recording SW
2	P.B & AF.R 9V	P45-2	Recording SW
3	Ring 9V	P45-3	Recording SW
4	F.R 9V	P45-4	Recording SW
5	GND	P45-5	Recording SW

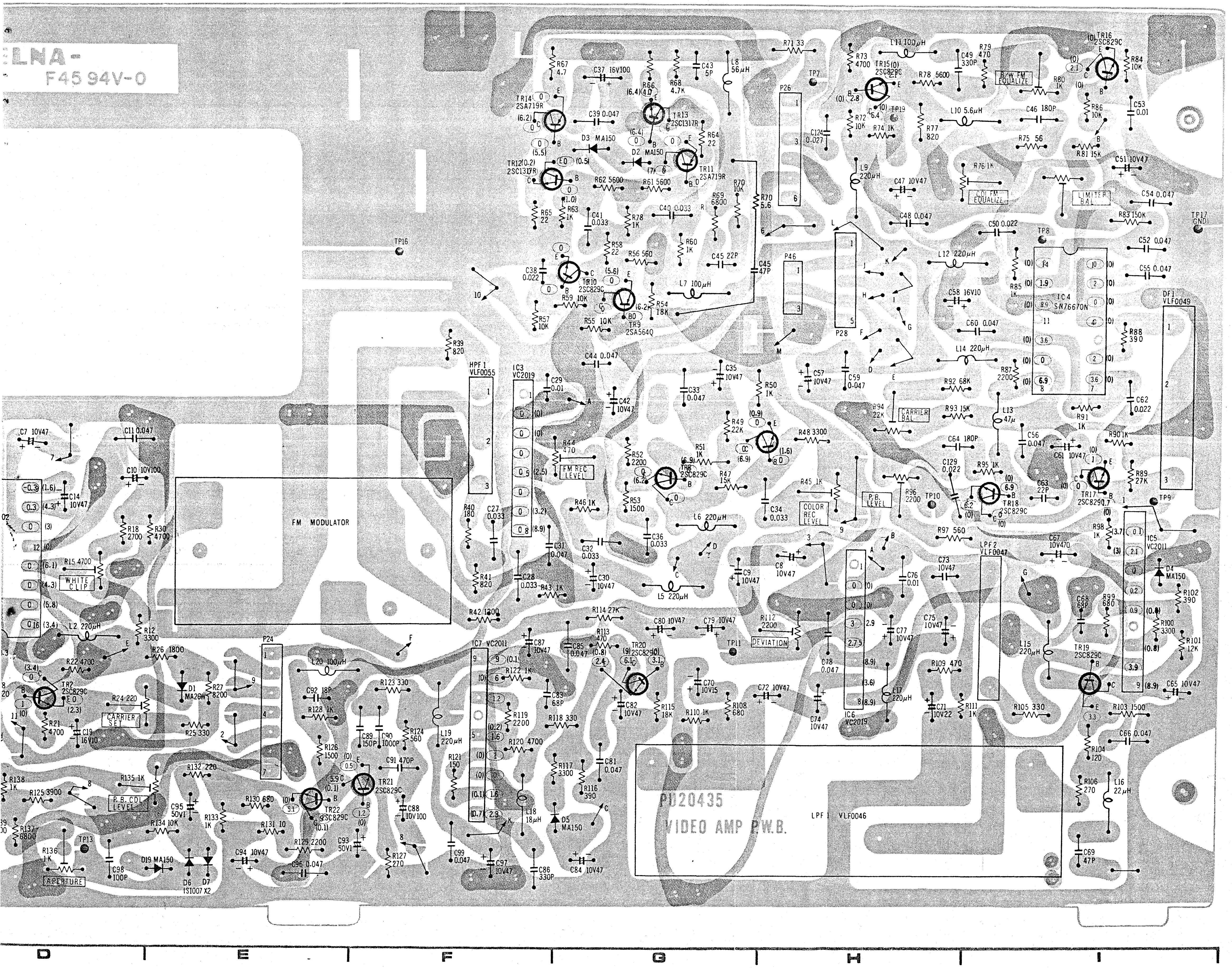
P29 (Video C.B.A)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	Line F.R 9V	P44-1	Recording SW
2	Camera F.R 9V	P44-2	Recording SW
3	Camera P.B 9V	P44-3	Recording SW
4	GND	P44-4	Recording SW

P30 (Video C.B.A)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	GND	—	—
2	Video Out	J107-3	RF Converter

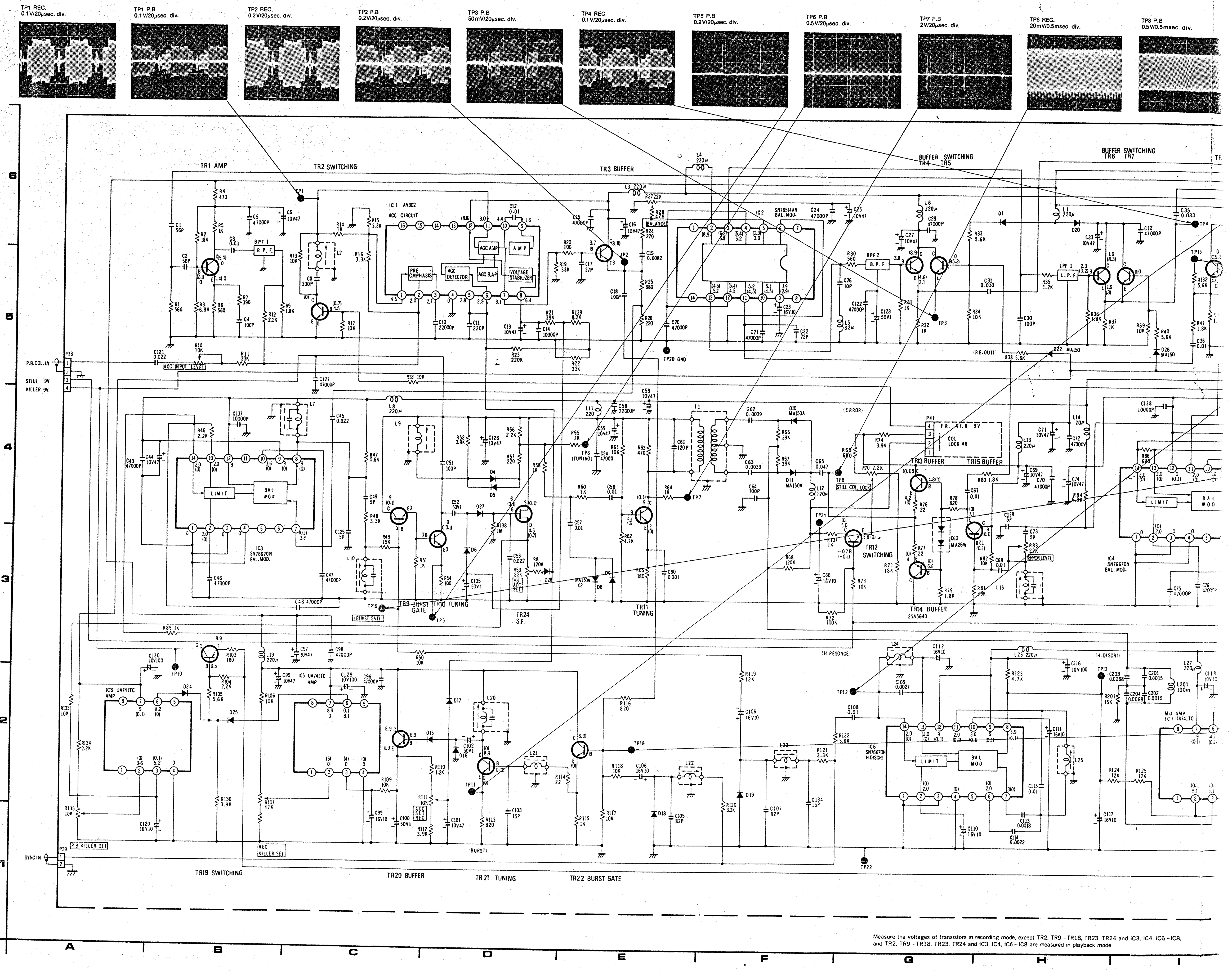
P46 (Video C.B.A)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	P.B & AF.R. 9V	P35-1	Pre Amp
2	F.R. 9V	P35-2	Pre Amp
3	GND	P35-3	Pre Amp

VIDEO CIRCUIT BOARD (VEP0363B1)

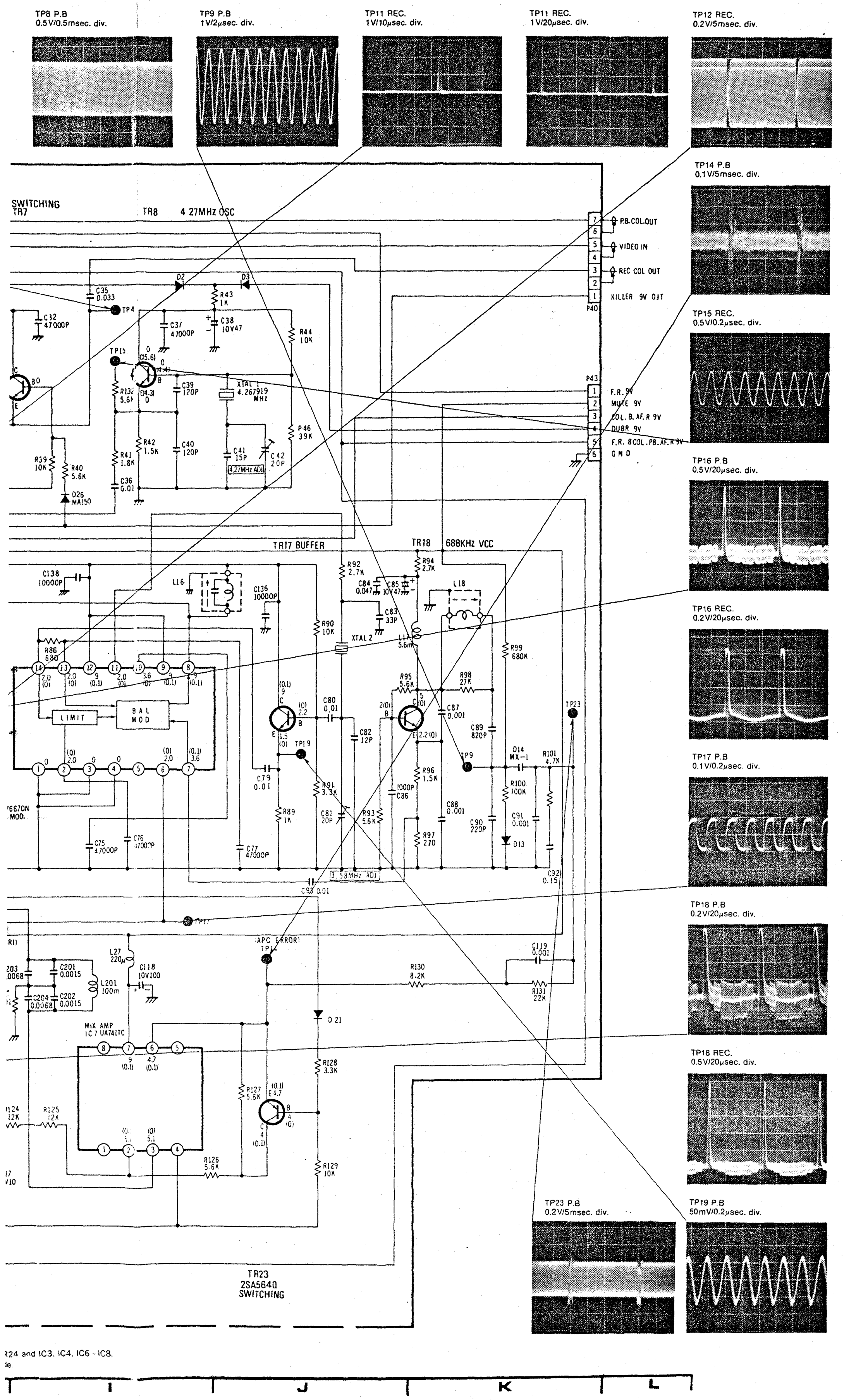

5
4
3
2
1
A
B
C
D
ELNA
METER SET
AGC PULSE LEVEL
E-E LEVEL
WHITE CLIP
APERTURE
IC9 VC4019
IC1 VC2021
IC2 AN302
IC8 BA308
DL1
TP15 (GND)
P25
P27
P29
P30
P32


ELNA-
F45 94V-0
FM MODULATOR
PU20435
VIDEO AMP P.W.B.
LPF 1 VLF0046
HPF 1 VLF0055
IC3 VC2019
IC4 SN76670N
IC5 VC2011
IC6 VC2019
IC7 VC2011
LPF2 VLF0047
DF1 VLF0049
P24
P26
P28
P46
B/W FM EQUALIZE
COLOR FM EQUALIZE
LIMITER BAL
CARRIER BAL
FM REC LEVEL
P.B. LEVEL
COLOR REC LEVEL
DEVIATION
WHITE CLIP
CARRIER SET
P.B. CDL LEVEL
APERTURE
TP7
TP8
TP9
TP10
TP11
TP13
TP16
TP17 GND
TP19
D
E
F
G
H
I

COLOUR CIRCUIT SCHEMATIC DIAGRAM


TP1 REC.
0.1V/20μsec. div.
TP1 P.B
0.1V/20μsec. div.
TP2 REC.
0.2V/20μsec. div.
TP2 P.B
0.2V/20μsec. div.
TP3 P.B
50mV/20μsec. div.
TP4 REC
0.1V/20μsec. div.
TP5 P.B
0.2V/20μsec. div.
TP6 P.B
0.5V/20μsec. div.
TP7 P.B
2V/20μsec. div.
TP8 REC.
20mV/0.5msec. div.
TP8 P.B
0.5V/0.5msec. div.
TR1 AMP
TR2 SWITCHING
TR3 BUFFER
BUFFER SWITCHING
TR4 TR5
BUFFER SWITCHING
TR6 TR7
IC1 AN302
ACC CIRCUIT
PRE EMPHASIS
AGC DETECTOR
AGC B.A.F
AGC AMP
AMP
VOLTAGE STABILIZER
IC2
SN76514AN
BAL. MOD.
BALANCE
B.P.F
BPF 1
BPF 2
LPF 1
L.P.F
P.B.COL.IN
STIUL 9V
KILLER 9V
P38
ACC INPUT LEVEL
TP20 GND
(P.B.OUT)
IC3
SN76670N
BAL. MOD.
LIMIT
BAL MOD
TR9 BURST GATE
TR10 TUNING
TR24 S.F.
TR11 TUNING
BURST GATE
P.B. ACC SET
T1
(ERROR)
P41
COL LOCK VR
TR13 BUFFER
TR15 BUFFER
TR12 SWITCHING
TR14 BUFFER
2SA564Q
STILL COL. LOCK
ERROR LEVEL
IC4
SN76670N
BAL. MOD.
(TUNING)
IC8 UA741TC
AMP
IC5 UA741TC
AMP
(H.RESONCE)
(H.DISCRI)
IC6
SN76670N
H.DISCRI
IC7 UA741TC
MIX AMP
ACC SET REC
P.B KILLER SET
REC KILLER SET
SYNC IN
P39
(BURST)
TR19 SWITCHING
TR20 BUFFER
TR21 TUNING
TR22 BURST GATE
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP10
TP11
TP12
TP13
TP15
TP16
TP18
TP22
TP24
6
5
4
3
2
1
A
B
C
D
E
F
G
H
I

Measure the voltages of transistors in recording mode, except TR2, TR9 - TR18, TR23, TR24 and IC3, IC4, IC6 - IC8, and TR2, TR9 - TR18, TR23, TR24 and IC3, IC4, IC6 - IC8 are measured in playback mode.


TP8 P.B 0.5V/0.5msec. div.
TP9 P.B 1V/2μsec. div.
TP11 REC. 1V/10μsec. div.
TP11 REC. 1V/20μsec. div.
TP12 REC. 0.2V/5msec. div.
TP14 P.B 0.1V/5msec. div.
TP15 REC. 0.5V/0.2μsec. div.
TP16 P.B 0.5V/20μsec. div.
TP16 REC. 0.2V/20μsec. div.
TP17 P.B 0.1V/0.2μsec. div.
TP18 P.B 0.2V/20μsec. div.
TP18 REC. 0.5V/20μsec. div.
TP23 P.B 0.2V/5msec. div.
TP19 P.B 50mV/0.2μsec. div.
SWITCHING TR7
TR8 4.27MHz OSC
TR17 BUFFER
TR18 688KHz VCC
P40
P43
P.B.COL.OUT
VIDEO IN
REC COL OUT
KILLER 9V OUT
F.R. 9V
MUTE 9V
COL. & AF. R 9V
DUBR 9V
F.R. & COL. P.B. & AF. R 9V
GND
LIMIT
BAL MOD
APC (ERROR)
MIX AMP IC 7 UA741TC
TR23 2SA564Q SWITCHING
I
J
K
L

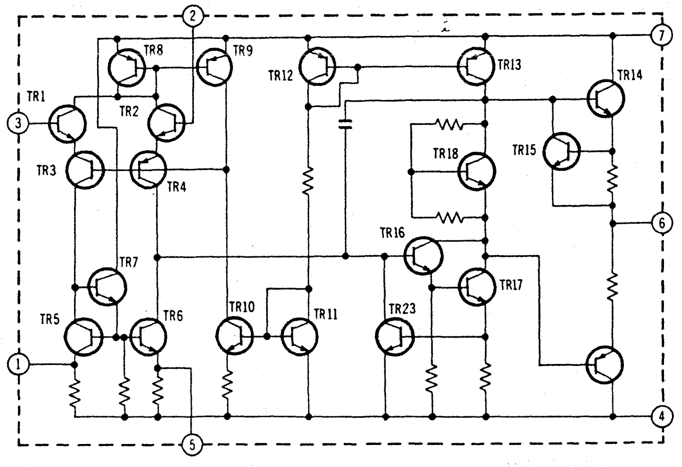
24 and IC3, IC4, IC6 - IC8,
le

UNLESS OTHERWISE SPECIFIED:

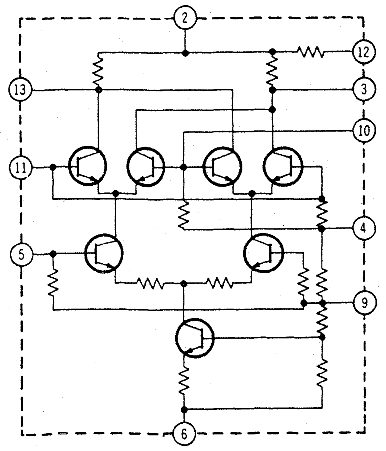
1. ALL TRANSISTORS ARE 2SC829C.
2. ALL DIODES ARE MA150.
3. ALL RESISTORS ARE IN OHMS, 1/4 WATT, ±10%.
4. ALL INDUCTORS ARE IN HENRIES.
5. ALL CAPACITORS ARE IN MICROFARADS.

$+\!\!|\!\!|\!-$ ELECTROLYTIC CAPACITOR.
$-\!|\!|\!-$ MYLAR & CERAMIC CAPACITOR.
$-\!|\!|_{PS}$ POLYSTYROL CAPACITOR.

μA741TC


TR1
TR2
TR3
TR4
TR5
TR6
TR7
TR8
TR9
TR10
TR11
TR12
TR13
TR14
TR15
TR16
TR17
TR18
TR23
1
2
3
4
5
6
7

SN76514NA


2
12
13
3
10
11
4
5
9
6

P38 (Colour C.B.A)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	P.B Col In	P37-1	Pre Amp
2	GND	—	Pre Amp
3	Still 9V	P37-3	Pre Amp
4	Killer 9V	P37-4	Pre Amp

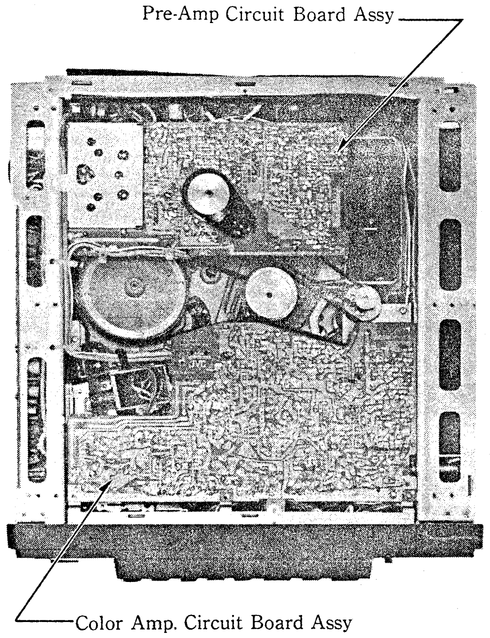
P39 (Colour C.B.A)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	Sync In	P27-1	Video
2	GND	—	Video

P40 (Colour C.B.A)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	Killer 9V Out	P24-1	Video
2	GND	—	Video
3	Rec Col Out	P24-3	Video
4	GND	—	Video
5	Video In	P24-5	Video
6	GND	—	Video
7	P.B Col Out	P24-7	Video

P41 (Colour C.B.A)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	Colour Lock	J26	Front Panel
2	Colour Lock	J27	Front Panel
3	Colour Lock	J28	Front Panel
4	F.R & AF.R. 9V In	J25	Front Panel

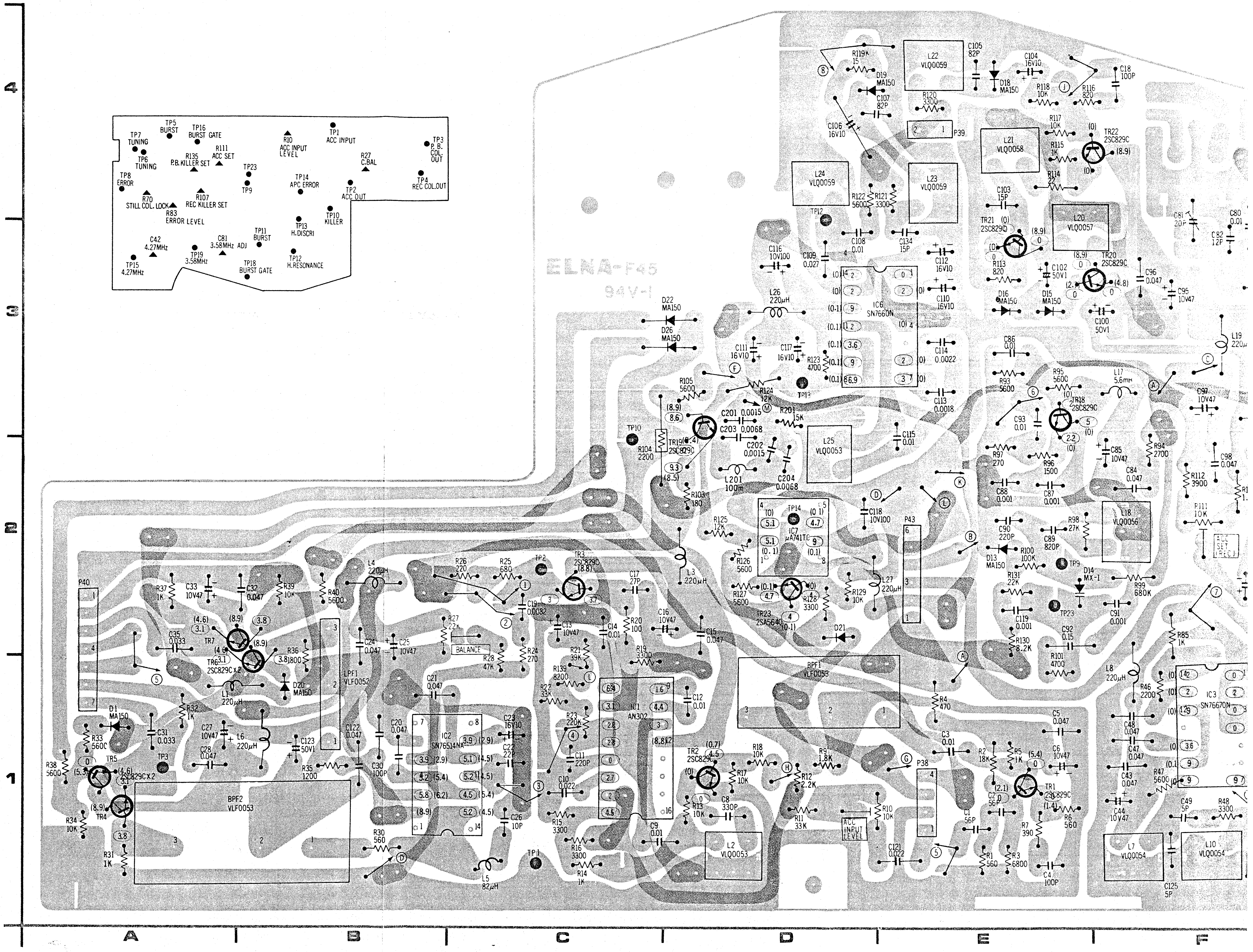
P43 (Colour C.B.A)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	F.R 9V	J19	Front Panel
2	Mute 9V	J20	Front Panel
3	Col P.B & AF. R. 9V	J22	Front Panel
4	Dub 9V	J21	Front Panel
5	F.R & Col P.B & AF.R. 9V	J23	Front Panel
6	GND	J24	Front Panel

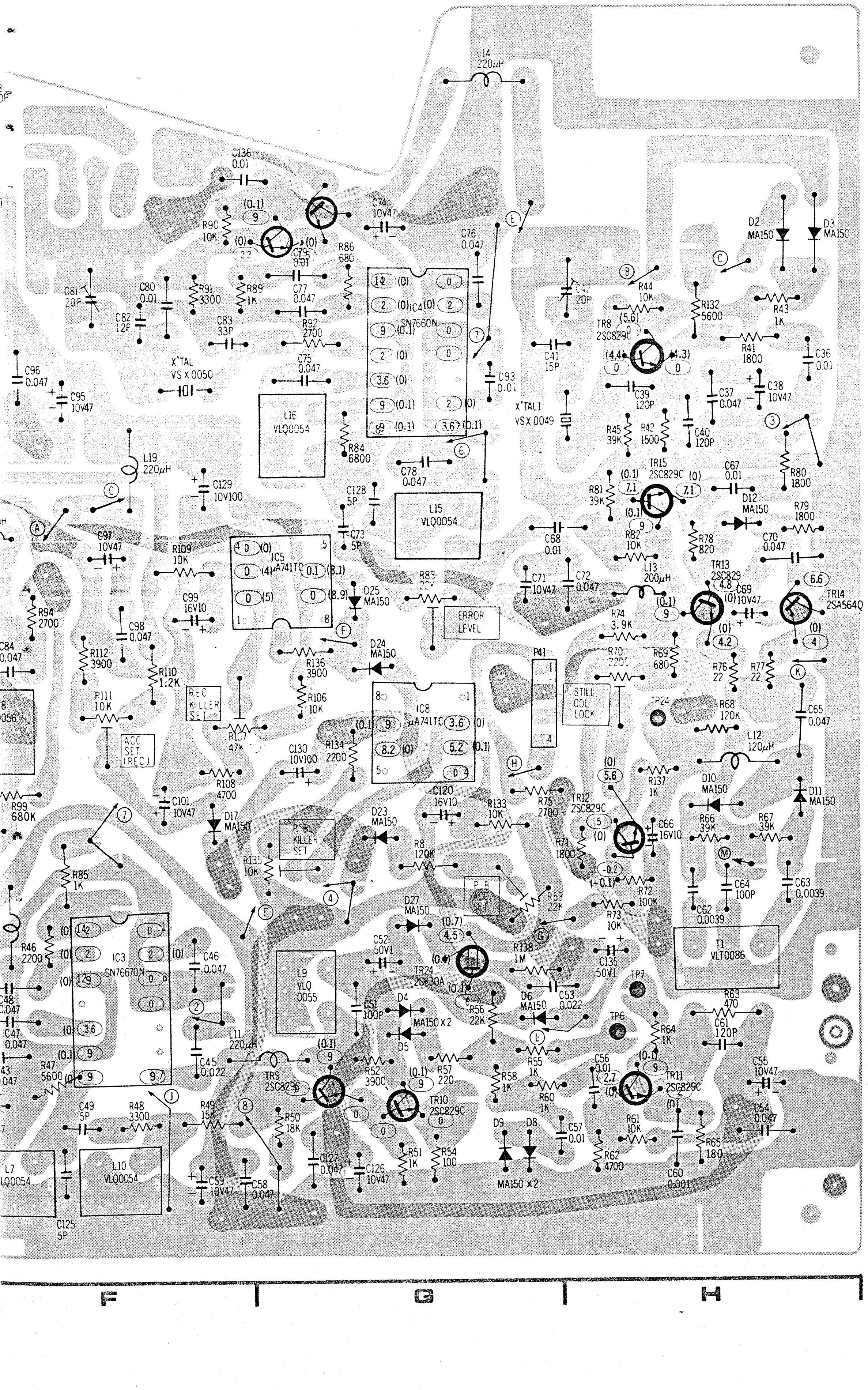
COLOUR CIRCUIT BOARD (VEP0840B1)


Pre-Amp Circuit Board Assy
Color Amp. Circuit Board Assy

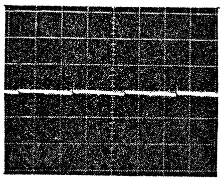
Color Circuit (VEP0840)	
TR1	E-1
TR2	D-1
TR3	C-2
TR4	A-1
TR5	A-1
TR6	B-1
TR7	B-2
TR8	H-3
TR9	G-1
TR10	G-1
TR11	H-1
TR12	H-2
TR13	H-2
TR14	H-2
TR15	H-3
TR17	G-4
TR18	E-3
TR19	D-3
TR20	E-3
TR21	E-3
TR22	E-4
TR23	D-2
IC1	C-1
IC2	B-1
IC3	F-1
IC4	G-3
IC5	G-3
IC6	E-3
IC7	D-2
IC8	G-2

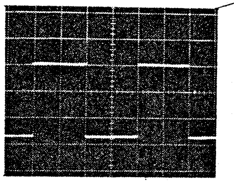
TP5 BURST
TP16 BURST GATE
TP7 TUNING
TP6 TUNING
R111 ACC SET
R135 P.B.KILLER SET
R10 ACC INPUT LEVEL
TP1 ACC INPUT
TP3 P.B. COL. OUT
R27 C.BAL
TP23
TP9
TP8 ERROR
R70 STILL COL. LOCK
R107 REC KILLER SET
R83 ERROR LEVEL
TP14 APC ERROR
TP2 ACC OUT
TP4 REC COL.OUT
TP10 KILLER
TP13 H.DISCRI
TP11 BURST
C42 4.27MHz
C81 3.58MHz ADJ
TP19 3.58MHz
TP18 BURST GATE
TP12 H.RESONANCE
TP15 4.27MHz

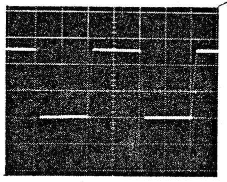

4
3
2
1
A
B
C
D
E
F
ELNA-F45 94V-I
IC1 AN302
IC2 SN76514N
IC3 SN76670N
IC6 SN76600N
IC7 μA741TC
BPF1 VLF0053
BPF2 VLF0053
LPF1 VLF0052
L2 VLQ0053
L7 VLQ0054
L10 VLQ0054
L18 VLQ0056
L20 VLQ0057
L21 VLQ0058
L22 VLQ0059
L23 VLQ0059
L24 VLQ0059
L25 VLQ0053
TR1 2SC829C
TR2 2SC829C
TR3 2SC829C
TR4
TR5 2SC829C×2
TR6 2SC829C×2
TR7
TR18 2SC829C
TR19 2SC829C
TR20 2SC829C
TR21 2SC829C
TR22 2SC829C
TR23 2SA564
BALANCE
ACC INPUT LEVEL
P38
P39
P40
P43

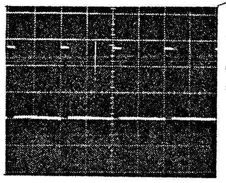

L14 220μH
C136 0.01
C74 10V47
R90 10K
R86 680
C75 0.01
C76 0.047
C81 20P
C80 0.01
R91 3300
R89 1K
C77 0.047
C82 12P
C83 33P
R92 2700
IC4 SN7660N
C42 20P
R44 10K
TR8 2SC829C
C41 15P
C93 0.01
X'TAL VSX0050
X'TAL1 VSX0049
C96 0.047
C95 10V47
C75 0.047
L16 VLQ0054
R84 6800
D2 MA150
D3 MA150
R132 5600
R43 1K
R41 1800
C36 0.01
C38 10V47
C37 0.047
C39 120P
R45 39K
R42 1500
C40 120P
L19 220μH
C129 10V100
C78 0.047
C128 5P
L15 VLQ0054
TR15 2SC829C
R81 39K
C67 0.01
R80 1800
D12 MA150
R79 1800
C73 5P
C97 10V47
R109 10K
IC5 μA741TC
C68 0.01
R82 10K
R78 820
C70 0.047
C71 10V47
C72 0.047
L13 200μH
TR13 2SC829
C69 10V47
TR14 2SA564Q
R83 22K
ERROR LEVEL
D25 MA150
C99 16V10
R94 2700
C98 0.047
R74 3.9K
R70 2200
R69 680
R76 22
R77 22
C84 0.047
R112 3900
R110 1.2K
R136 3900
D24 MA150
P41
R111 10K
REC KILLER SET
R106 10K
IC8 μA741TC
STILL COL LOCK
TP24
R68 120K
C65 0.047
ACC SET (REC)
R107 47K
C130 10V100
R134 2200
L12 120μH
R108 4700
D10 MA150
D11 MA150
R99 680K
C101 10V47
D17 MA150
C120 16V10
R133 10K
R75 2700
TR12 2SC829C
R137 1K
C66 16V10
R66 39K
R67 39K
P.B KILLER SET
D23 MA150
R8 120K
R71 1800
R85 1K
R135 10K
P.B ACC SET
R53 22K
R72 100K
C64 100P
C63 0.0039
C62 0.0039
D27 MA150
R73 10K
R46 2200
IC3 SN76670N
C46 0.047
C52 50V1
TR24 2SK30A
R138 1M
C135 50V1
T1 VLT0086
TP7
C48 0.047
L9 VLQ0055
C51 100P
D4
MA150×2
D5
D6 MA150
C53 0.022
R63 470
TP6
R64 1K
C47 0.047
R56 22K
C61 120P
L11 220μH
R55 1K
R47 5600
C45 0.022
TR9 2SC829C
R52 3900
R57 220
TR10 2SC829C
R58 1K
R60 1K
C56 0.01
TR11 2SC829C
C55 10V47
C49 5P
R48 3300
R49 15K
R50 18K
D9
D8
C57 0.01
R61 10K
C54 0.047
R51 1K
R54 100
R62 4700
R65 180
C127 0.047
C126 10V47
MA150 ×2
C60 0.001
L7 VLQ0054
L10 VLQ0054
C59 10V47
C58 0.047
C125 5P
A
B
C
E
F
G
H
J
K
L
M
②
③
④
⑥
⑦
⑧
F
G
H

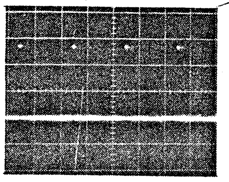
PRE-AMP CIRCUIT SCHEMATIC DIAGRAM

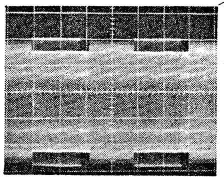

TP1 P.B
0.1V/20msec. div.

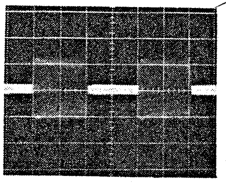

TP2 P.B
2V/10msec. div.

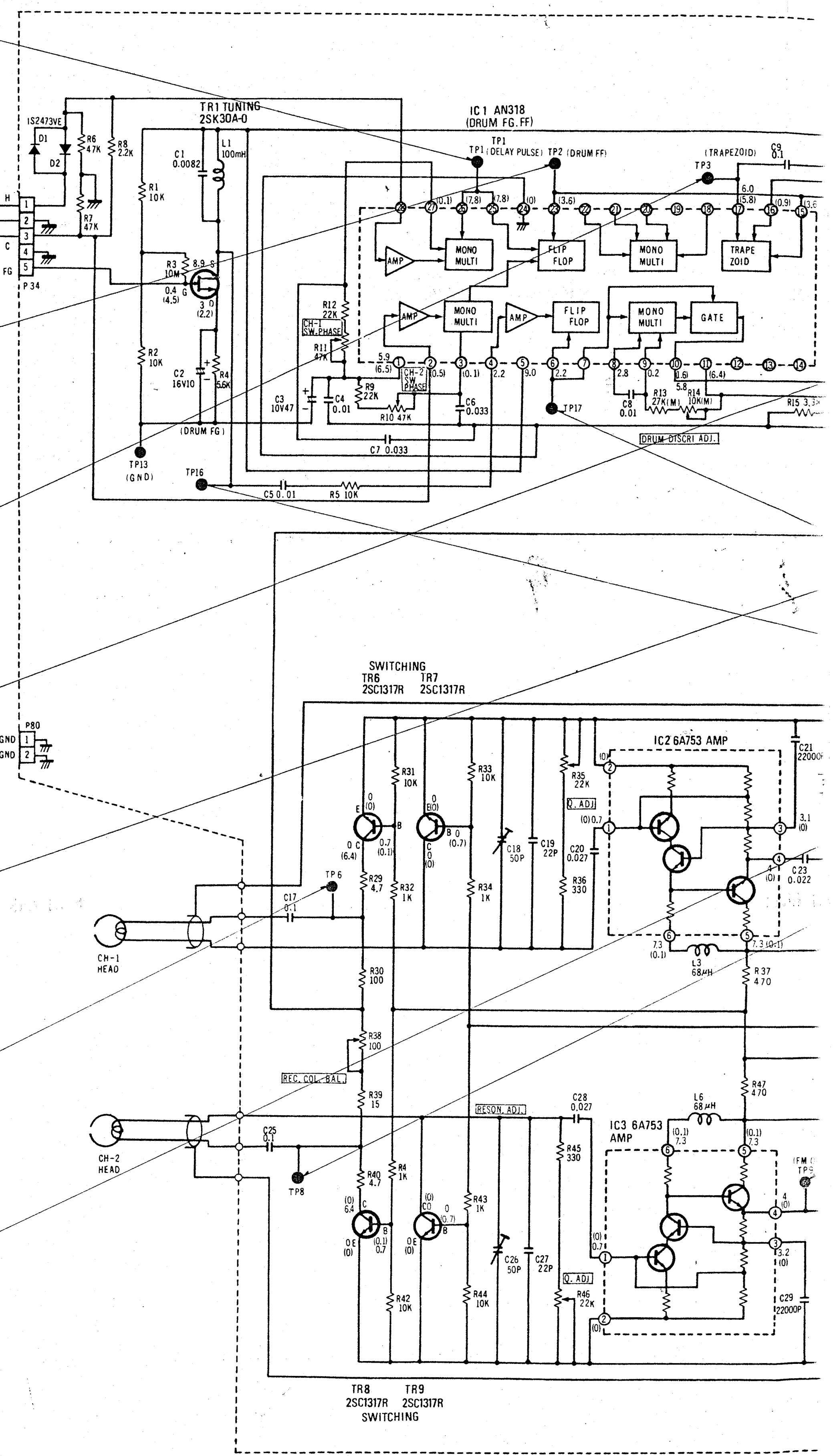

TP3 P.B/REC.
1V/10msec. div.


TP4 P.B/REC.
1V/0.2msec. div.


TP5 STILL.
1V/10msec. div.

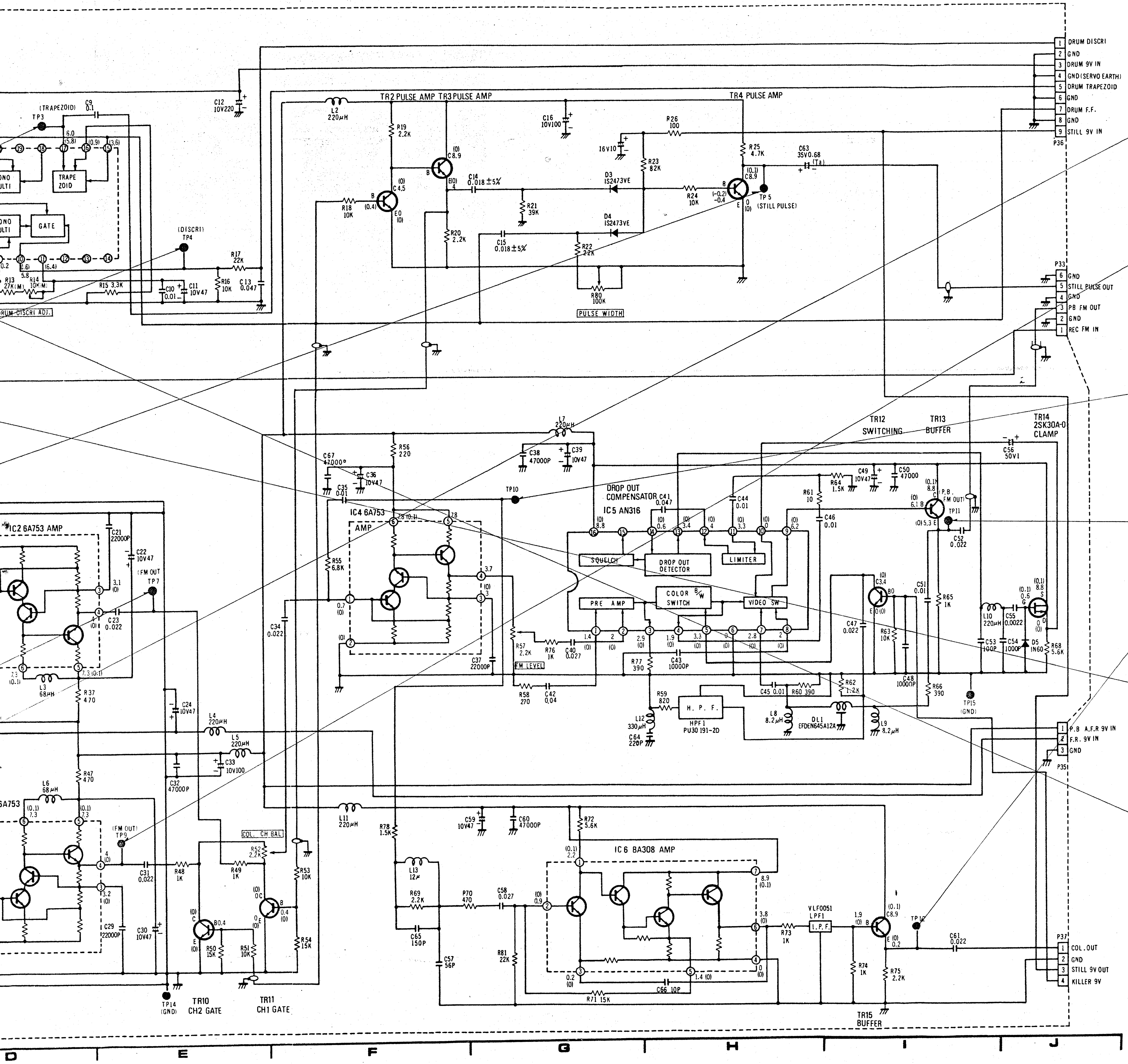

TP6 REC.
1V/5msec. div.


TP7 P.B
50mV/10msec. div.

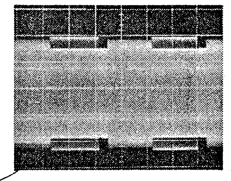


IC1 AN318
(DRUM FG.FF)
TR1 TUNING
2SK30A-0
1S2473VE
D1
D2
R6 47K
R8 2.2K
R7 47K
C1 0.0082
L1 100mH
R1 10K
R2 10K
R3 10M
8.9 S
0.4 (4.5) G
3.0 (2.2) D
C2 16V10
R4 5.6K
(DRUM FG)
DRUM PULSE
HEAD
H
C
GND
DRUM FG
P34
TP13 (GND)
TP16
C5 0.01
R5 10K
TP1 (DELAY PULSE)
TP2 (DRUM FF)
(TRAPEZOID)
TP3
C9 0.1
AMP
MONO MULTI
FLIP FLOP
MONO MULTI
TRAPE ZOID
AMP
MONO MULTI
AMP
FLIP FLOP
MONO MULTI
GATE
R12 22K
CH-1 SW.PHASE
R11 47K
CH-2 SW PHASE
R9 22K
R10 47K
C3 10V47
C4 0.01
C6 0.033
C7 0.033
TP17
C8 0.01
R13 27K(M)
R14 10K(M)
R15 3.3K
DRUM DISCRI ADJ.
5.9 (6.5)
(0.5)
(0.1)
2.2
9.0
2.2
2.8
0.2
5.8
(.6)
(6.4)
(0.1)
(7.8)
(7.8)
(0)
(3.6)
6.0
(5.8)
(0.9)
SWITCHING
TR6 2SC1317R
TR7 2SC1317R
P80
GND
GND
R31 10K
R33 10K
R35 22K
Q. ADJ
IC2 6A753 AMP
C21 22000P
0 (0) E
0.7 (0.1) B
0 C (6.4)
0 E(0)
B 0 (0.7)
C 0 (0)
C18 50P
C19 22P
C20 0.027
R36 330
3.1 (0)
C23 0.022
TP6
C17 0.1
R29 4.7
R32 1K
R34 1K
CH-1 HEAD
7.3 (0.1)
L3 68μH
7.3 (0.1)
R37 470
R30 100
R38 100
REC. COL. BAL.
R39 15
RESON. ADJ.
C28 0.027
L6 68μH
R47 470
IC3 6A753 AMP
CH-2 HEAD
C25 0.1
TP8
R45 330
R40 4.7
R41 1K
R43 1K
(0) 6.4 C
0 E (0)
B (0.1) 0.7
(0) C 0
0 E (0)
(0.7) B
C26 50P
C27 22P
Q. ADJ
R46 22K
R42 10K
R44 10K
(0.1) 7.3
(0.1) 7.3
(FM TP9)
3.2 (0)
C29 22000P
TR8 2SC1317R
TR9 2SC1317R
SWITCHING
6
5
4
3
2
1
A
B
C
D

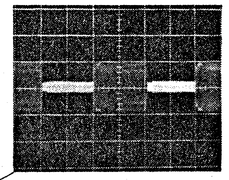
Measure the voltages of transi


TR2 PULSE AMP
TR3 PULSE AMP
TR4 PULSE AMP
TP3
(TRAPEZOID)
TRAPE ZOID
GATE
(DISCRI) TP4
TP 5 (STILL PULSE)
PULSE WIDTH
DRUM DISCRI
GND
DRUM 9V IN
GND(SERVO EARTH)
DRUM TRAPEZOID
GND
DRUM F.F.
GND
STILL 9V IN
P36
P33
GND
STILL PULSE OUT
GND
PB FM OUT
GND
REC FM IN
TR12 SWITCHING
TR13 BUFFER
TR14 2SK30A-0 CLAMP
DROP OUT COMPENSATOR
IC5 AN316
IC4 6A753 AMP
IC2 6A753 AMP
TP10
TP7
SQUELCH
DROP OUT DETECTOR
LIMITER
PRE AMP
COLOR B/W SWITCH
VIDEO SW
FM LEVEL
H. P. F.
HPF1 PU30 191-2D
DL1 EFDEN6SA12A
TP11
TP15 (GND)
P.B A.F.R 9V IN
F.R. 9V IN
GND
P35
COL. CH BAL
TP9
IC6 BA308 AMP
VLF0051 LPF1
L.P.F.
P37
COL. OUT
GND
STILL 9V OUT
KILLER 9V
TR15 BUFFER
TP14 (GND)
TR10 CH2 GATE
TR11 CH1 GATE
D
E
F
G
H
I
J

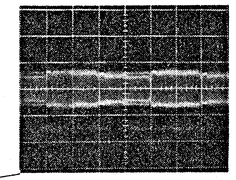
TP8 REC.
1V/5msec. div.



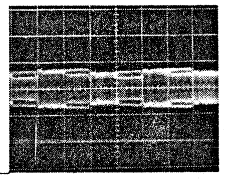
TP9 P.B
50mV/10msec. div.



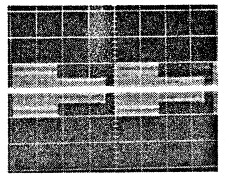
TP10 P.B
0.1V/10msec. div.



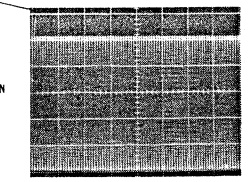
TP11 P.B
0.1V/10msec. div.



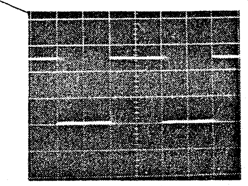
TP12 P.B
0.1V/5msec. div.

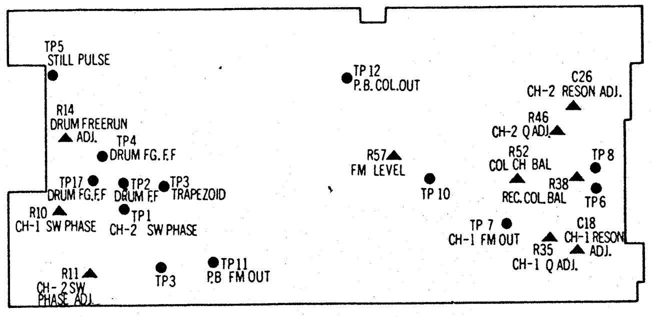


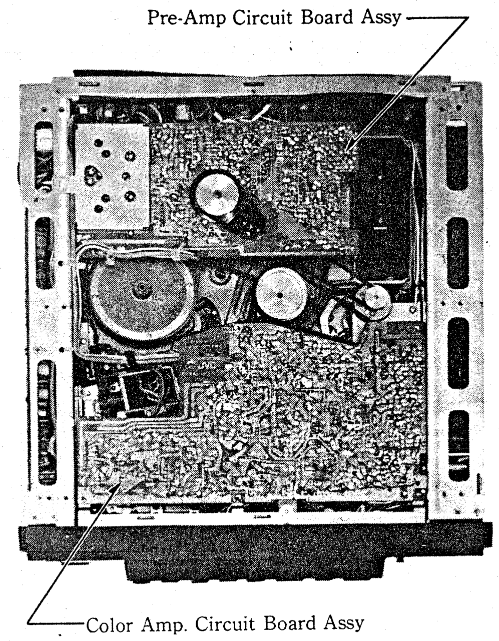
TP16 REC./P.B
1V/2msec. div.



TP17 P.B
2V/0.1msec. div.






Pre-Amp Circuit Board Assy
Color Amp. Circuit Board Assy

UNLESS OTHERWISE SPECIFIED

1. ALL TRANSISTORS ARE 2SC829C.
2. ALL RESISTORS ARE IN OHMS, 1/4 WATT, ±10%.
   R3: COMPOSIT RESISTOR.
   R13: OXID METAL RESISTOR.
   R14: METAL GRAZE.
3. ALL CAPACITORS ARE IN MICROFARADS.
   -||- MYLAR & CERAMIC CAPACITOR (50 WV).
   +||- ELECTROLYTIC CAPACITOR.
   -||P POLYSTYROL CAPACITOR.
   -||Ta TANTALUME CAPACITOR.

he voltages of transistors in recording mode. except TR2~TR3, TR11~TR15 and IC2~IC6, and the voltages of TR2~TR3, TR11~TR15 and IC2~IC6 are measured in playback mode.

PRE-AMP CIRCUIT BOARD (VEP0364B1)

P33 (Pre Amp C.B.A)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	Rec FM	P26-1	Video
2	GND	—	Video
3	P.B FM	P26-3	Video
4	GND	—	Video
5	Still Pulse	P26-5	Video
6	GND	—	Video

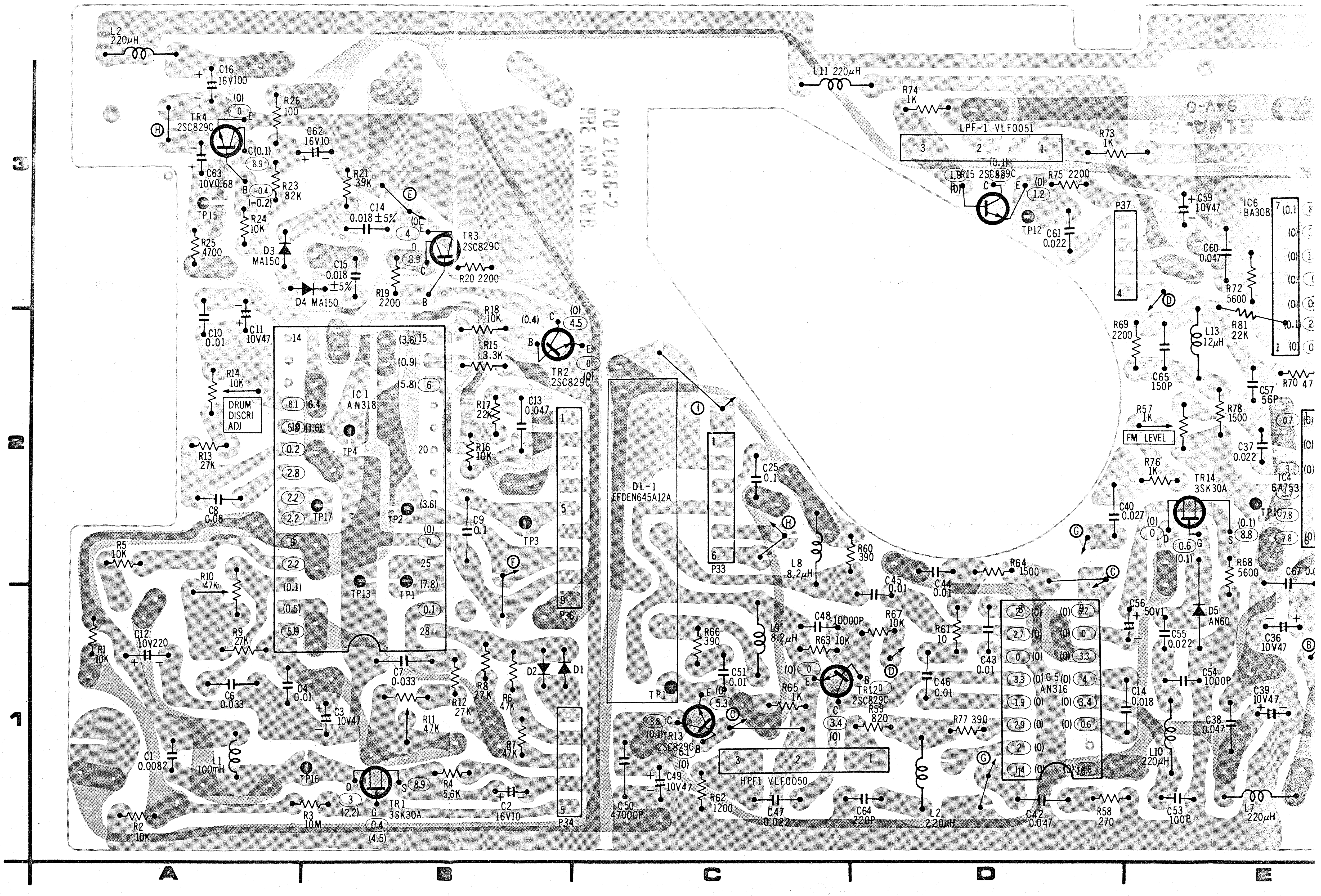
P34 (Pre Amp C.B.A)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	Hot	P74-1	Drum Terminal
2	GND	—	Drum Terminal
3	Cold	P74-2	Drum Terminal
4	GND	—	Drum Terminal
5	5kHz In	P74-5	Drum Terminal

P35 (Pre Amp C.B.A)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	P.B & AF.R. 9V	P46-1	Video
2	F.R 9V	P46-2	Video
3	GND	P46-3	Video

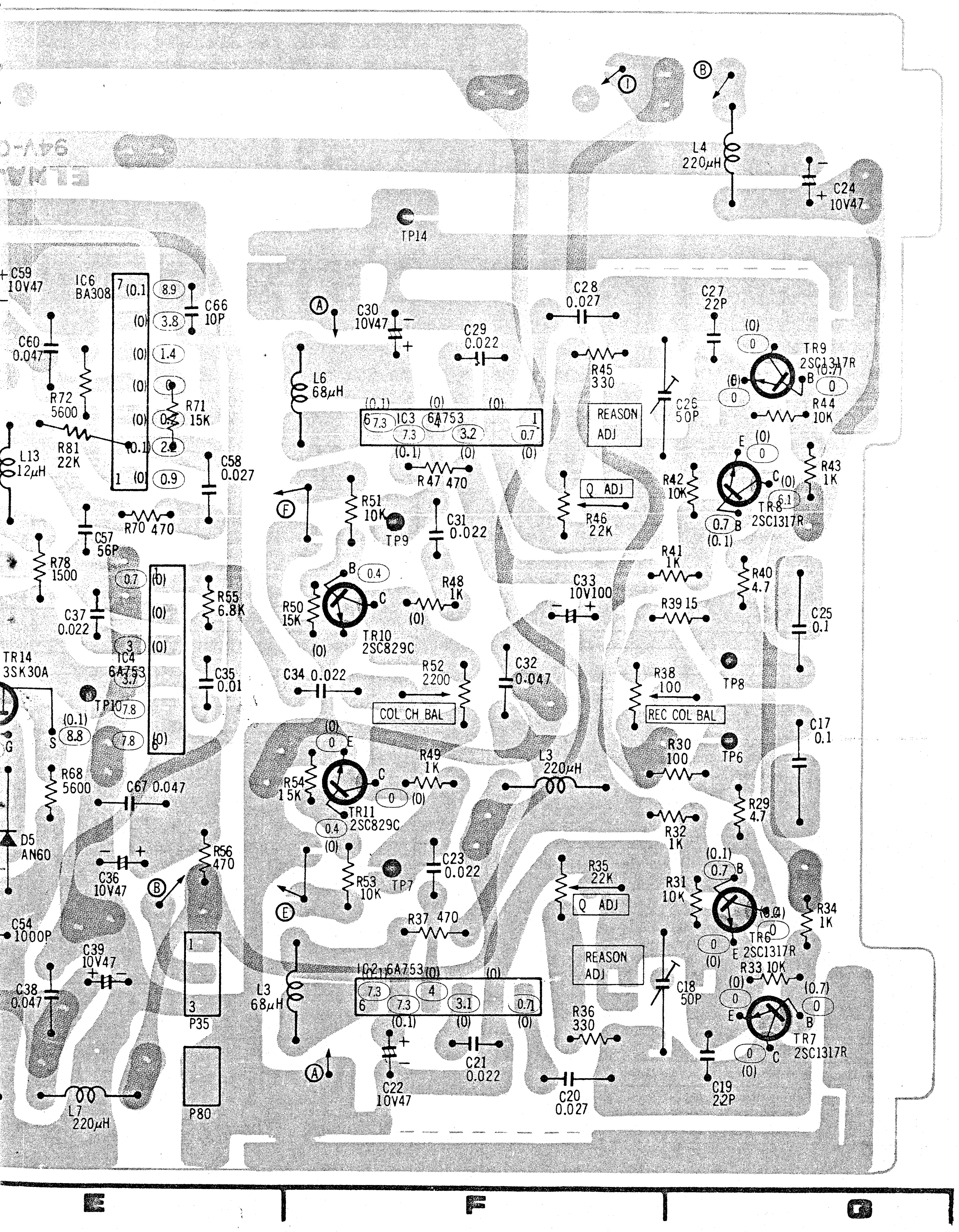
P36 (Pre Amp C.B.A)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	Discri	P67-1	Servo
2	GND	—	Servo
3	Drum 9V	P67-3	Servo
4	GND	P67-4	Servo
5	Trapezoid	P67-5	Servo
6	GND	—	Servo
7	Drum Flip Flop	P67-7	Servo
8	GND	—	Servo
9	Still 9V	P67-9	Servo

P37 (Pre Amp C.B.A)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	P.B Col Out	P38-1	Colour
2	GND	—	Colour
3	Still 9V	P38-3	Colour
4	Killer 9V	P38-4	Colour

Pre-amp Circuit (VEP0364)	
TR1	B-1
TR2	B-2
TR3	B-3
TR4	A-3
TR6	G-1
TR7	G-1
TR8	G-2
TR9	G-3
TR10	F-2
TR11	F-2
TR12	C-1
TR13	C-1
TR14	E-2
TR15	D-3
IC1	B-2
IC2	F-1
IC3	F-3
IC4	E-2
IC5	D-1
IC6	E-3



3
2
1
A
B
C
D
E
L2 220μH
C16 16V100
R26 100
TR4 2SC829C
C62 16V10
C63 10V0.68
R23 82K
R21 39K
C14 0.018±5%
TR3 2SC829C
TP15
R24 10K
R25 4700
D3 MA150
C15 0.018 ±5%
D4 MA150
R19 2200
R20 2200
PU 20436-2 PRE AMP P.W.B.
L11 220μH
R74 1K
LPF-1 VLF0051
R73 1K
TR15 2SC829C
R75 2200
TP12
C61 0.022
P37
C59 10V47
IC6 BA308
C60 0.047
R72 5600
R81 22K
R69 2200
L13 12μH
C65 150P
R70 47
C57 56P
R78 1500
R57 1K
FM LEVEL
C37 0.022
R76 1K
TR14 3SK30A
IC4 6A753
TP10
C40 0.027
R68 5600
C67
C10 0.01
C11 10V47
IC1 AN318
R14 10K
DRUM DISCRI ADJ
TP4
R18 10K
R15 3.3K
TR2 2SC829C
R17 22K
C13 0.047
R16 10K
R13 27K
C8 0.08
TP17
TP2
C9 0.1
TP3
DL-1 EFDEN645A12A
P33
C25 0.1
L8 8.2μH
R60 390
R64 1500
C45 0.01
C44 0.01
C56 50V1
D5 AN60
C55 0.022
C36 10V47
R5 10K
R10 47K
TP13
TP1
P36
R66 390
C48 10000P
R67 10K
L9 8.2μH
R63 10K
R61 10
C43 0.01
IC5 AN316
C14 0.018
C54 1000P
C39 10V47
R1 10K
C12 10V220
R9 27K
C7 0.033
C6 0.033
C4 0.01
C3 10V47
R12 27K
R8 27K
R6 47K
D2
D1
R11 47K
TP1
C51 0.01
R65 1K
TR12 2SC829C
R59 820
C46 0.01
R77 390
C38 0.047
L10 220μH
TR13 2SC829C
C1 0.0082
L1 100mH
TP16
TR1 3SK30A
R4 5.6K
R7 47K
C50 47000P
C49 10V47
HPF1 VLF0050
R62 1200
R2 10K
R3 10M
C2 16V10
P34
C47 0.022
C64 220P
L2 220μH
C42 0.047
R58 270
C53 100P
L7 220μH



94V-0
TP14
L4 220μH
C24 10V47
C59 10V47
IC6 BA308
C66 10P
C60 0.047
R72 5600
R71 15K
R81 22K
L13 12μH
C58 0.027
C57 56P
R70 470
R78 1500
R55 6.8K
C37 0.022
IC4 6A753
C35 0.01
TR14 3SK30A
TP10
R68 5600
C67 0.047
D5 AN60
C36 10V47
R56 470
C54 1000P
C39 10V47
C38 0.047
P35
P80
L7 220μH
C30 10V47
C29 0.022
C28 0.027
R45 330
C27 22P
TR9 2SC1317R
L6 68μH
IC3 6A753
REASON ADJ
C26 50P
R44 10K
R47 470
Q ADJ
R46 22K
R42 10K
TR8 2SC1317R
R43 1K
R51 10K
TP9
C31 0.022
R41 1K
R40 4.7
R50 15K
TR10 2SC829C
R48 1K
C33 10V100
R39 15
C25 0.1
C34 0.022
R52 2200
C32 0.047
R38 100
TP8
COL CH BAL
REC COL BAL
C17 0.1
R54 15K
TR11 2SC829C
R49 1K
L3 220μH
R30 100
TP6
R29 4.7
R32 1K
R53 10K
TP7
C23 0.022
R35 22K
Q ADJ
R31 10K
TR6 2SC1317R
R34 1K
R37 470
REASON ADJ
R33 10K
L3 68μH
IC2 6A753
C18 50P
TR7 2SC1317R
R36 330
C22 10V47
C21 0.022
C20 0.027
C19 22P
Ⓐ
Ⓑ
Ⓔ
Ⓕ
Ⓘ
E
F
G

SERVO CIRCUIT SCHEMATI

P54 (Servo C.B.A)

PIN NO.	SIGNAL NAME	DESTINATION
1	GND	P13-1 Transport
2	Pause	P13-2 Transport
3	Pinch Solenoid Timing Pulse	P13-3 Transport
4	Still 9V	P13-4 Transport

P55 (Servo C.B.A)

PIN NO.	SIGNAL NAME	DESTINATION
1	12V (S)	P14-1 Transport
2	Ring 9V	P14-2 Transport
3	Timing 12V	P14-3 Transport
4	Timing Off 12V	P14-4 Transport
5	Drum 9V	P14-5 Transport
6	9V	P14-6 Transport
7	GND	P14-7 Transport

P60 (Servo C.B.A)

PIN NO.	SIGNAL NAME	DESTINATION
1	Drum Error	P21-1 M.D.A
2	GND	— M.D.A
3	Drum Stop	P21-3 M.D.A
4	Capstan Stop	P21-4 M.D.A
5	GND	— M.D.A
6	Capstan Error	P21-6 M.D.A

P66 (Servo C.B.A)

PIN NO.	SIGNAL NAME	DESTINATION
1	Rec Video In	J7 Connector Panel
2	GND	— Connector Panel
3	—	— —
4	GND	— Connector Panel
5	Video In	J20 Connector Panel
6	Rec Timing Pulse	J21 Connector Panel
7	GND	J22 Connector Panel
8	Ring 9V	J23 Connector Panel

P67 (Servo C.B.A)

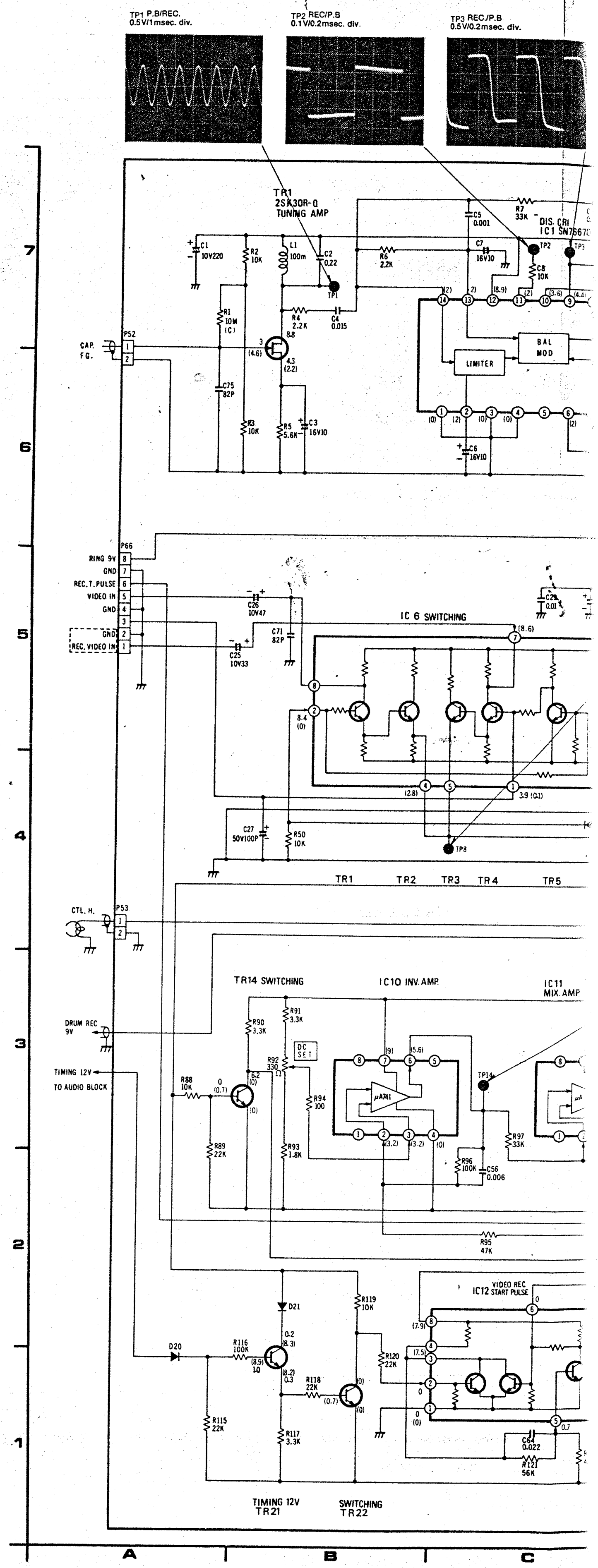
PIN NO.	SIGNAL NAME	DESTINATION
1	Discri	P36-1 Pre Amp
2	GND	— Pre Amp
3	Drum 9V	P36-3 Pre Amp
4	GND	P36-4 Pre Amp
5	Trapezoid	P36-5 Pre Amp
6	GND	— Pre Amp
7	Drum Flip Flop	P36-7 Pre Amp
8	GND	— Pre Amp
9	Still 9V	P36-9 Pre Amp

P68 (Servo C.B.A)

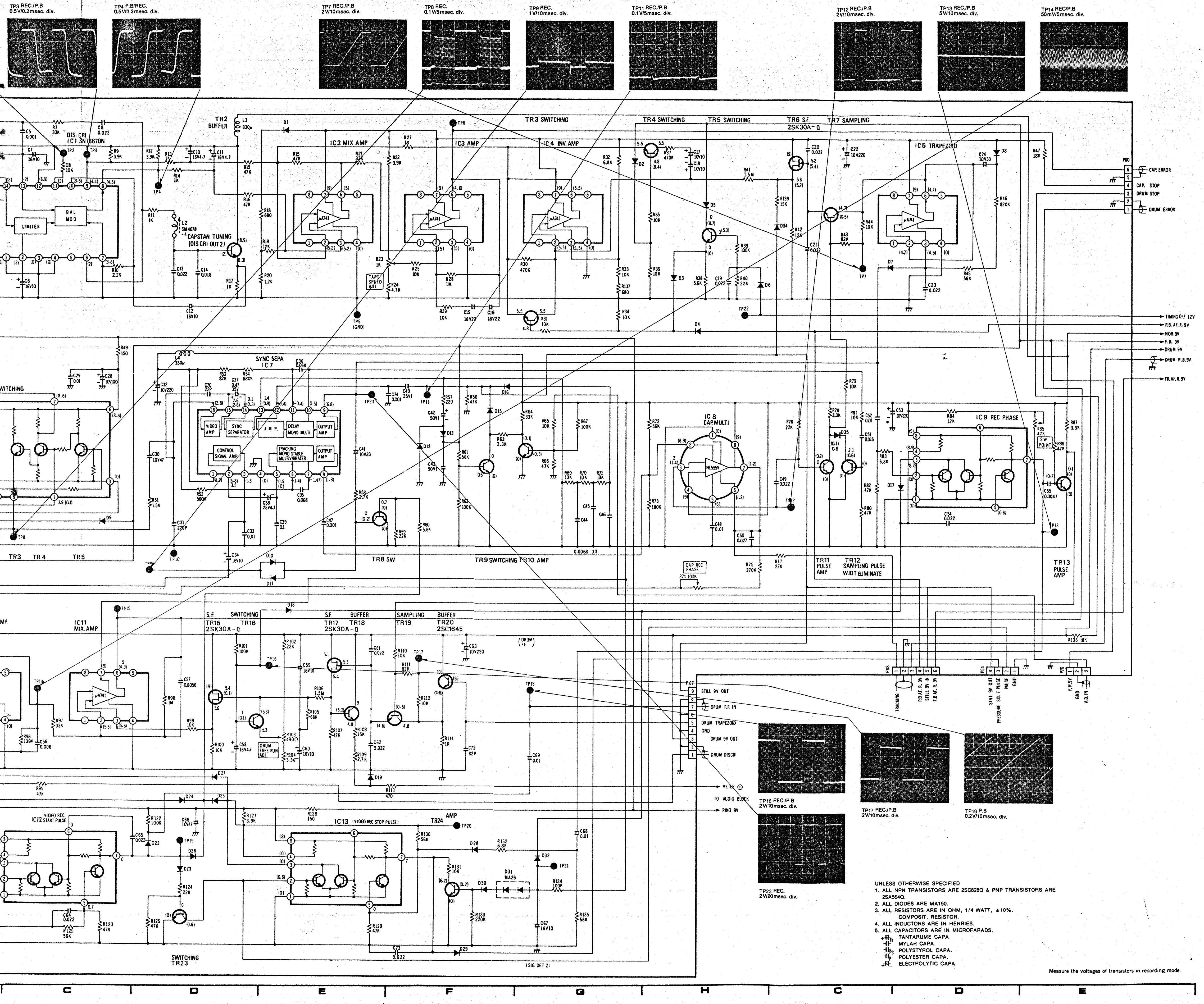
PIN NO.	SIGNAL NAME	DESTINATION
1	Tracking	J11 Front Panel
2	GND	J12 Front Panel
3	Drum P.B 9V	J13 Front Panel
4	P.B & AF.R. 9V	J9 Front Panel
5	Still 9V	J10 Front Panel
6	F.R & AF.R. 9V	J45 Front Panel

P70 (Servo C.B.A)

PIN NO.	SIGNAL NAME	DESTINATION
1	F.R 9V	P72-1 S.S.G
2	GND	— S.S.G
3	V.D In	P72-3 S.S.G


TP1 P.B/REC. 0.5V/1msec. div.
TP2 REC/P.B 0.1V/0.2msec. div.
TP3 REC/P.B 0.5V/0.2msec. div.
TR1 2SK30R-O TUNING AMP
DIS. CRI IC1 SN7567
BAL MOD
LIMITER
CAP. FG.
P52
P66
RING 9V
GND
REC. T. PULSE
VIDEO IN
GND
REC. VIDEO IN
IC 6 SWITCHING
TP8
TR1 TR2 TR3 TR4 TR5
CTL. H.
P53
TR14 SWITCHING
IC10 INV. AMP
IC11 MIX AMP
DRUM REC 9V
TIMING 12V TO AUDIO BLOCK
DC SET
TP14
VIDEO REC IC12 START PULSE
TIMING 12V TR21
SWITCHING TR22
7
6
5
4
3
2
1
A
B
C

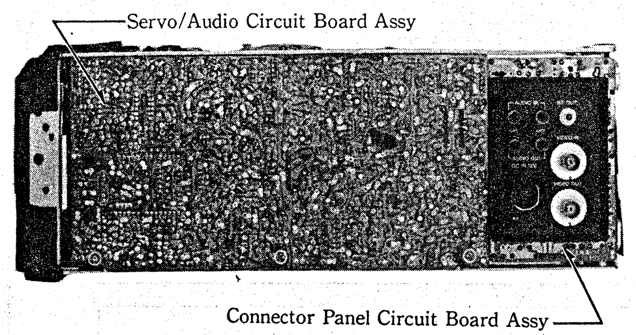
EMATIC DIAGRAM


TP3 REC./P.B 0.5V/0.2msec. div.
TP4 P.B/REC. 0.5V/0.2msec. div.
TP7 REC./P.B 2V/10msec. div.
TP8 REC. 0.1V/5msec. div.
TP9 REC. 1V/10msec. div.
TP11 REC./P.B 0.1V/5msec. div.
TP12 REC./P.B 2V/10msec. div.
TP13 REC./P.B 5V/10msec. div.
TP14 REC/P.B 50mV/5msec. div.
TR2 BUFFER
DIS CRI IC1 SN76670N
LIMITER
BAL MOD
CAPSTAN TUNING (DISCRI OUT 2)
IC2 MIX AMP
IC3 AMP
TR3 SWITCHING
IC4 INV. AMP
TR4 SWITCHING
TR5 SWITCHING
TR6 S.F. 2SK30A-Q
TR7 SAMPLING
IC5 TRAPEZOID
CAP. ERROR
CAP. STOP
DRUM STOP
DRUM ERROR
TIMING OFF 12V
P.B. AF. R. 9V
NOR. 9V
F. R. 9V
DRUM 9V
DRUM P.B. 9V
FR. AF. R. 9V
SYNC SEPA IC7
VIDEO AMP
SYNC SEPARATOR
A.M.P.
DELAY MONO MULTI
OUTPUT AMP
CONTROL SIGNAL AMP
TRACKING MONO STABLE MULTIVIBRATOR
IC8 CAP. MULTI
IC9 REC PHASE
TR8 SW
TR9 SWITCHING
TR10 AMP
TR11 PULSE AMP
TR12 SAMPLING PULSE WIDT ELIMINATE
TR13 PULSE AMP
CAP. REC PHASE
IC11 MIX AMP
S.F. SWITCHING TR15 TR16 2SK30A-Q
S.F. BUFFER TR17 TR18 2SK30A-Q
SAMPLING TR19
BUFFER TR20 2SC1645
DRUM FREE RUN ADJ.
STILL 9V OUT
DRUM F.F. IN
DRUM TRAPEZOID
GND
DRUM 9V OUT
DRUM DISCRI
METER
TO AUDIO BLOCK
RING 9V
TRACKING
P.B. AF. R. 9V
STILL 9V IN
F.B. AF. R. 9V
STILL 9V OUT
PRESSURE SOL. F PULSE
PAUSE
GND
F. R. 9V
GND
V. D. IN
TP18 REC/P.B 2V/10msec. div.
TP17 REC/P.B 2V/10msec. div.
TP16 P.B 0.2V/10msec. div.
TP23 REC. 2V/20msec. div.
VIDEO REC IC12 START PULSE
IC13 (VIDEO REC STOP PULSE)
TR24 AMP
SWITCHING TR23
(SIG DET 2)
C
D
E
F
G
H
C
D
E

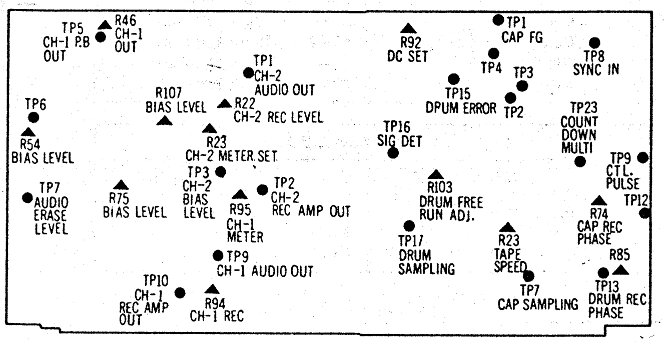
UNLESS OTHERWISE SPECIFIED
1. ALL NPN TRANSISTORS ARE 2SC828Q & PNP TRANSISTORS ARE 2SA564Q.
2. ALL DIODES ARE MA150.
3. ALL RESISTORS ARE IN OHM, 1/4 WATT, ±10%. COMPOSIT, RESISTOR.
4. ALL INDUCTORS ARE IN HENRIES.
5. ALL CAPACITORS ARE IN MICROFARADS.

Ta TANTARUME CAPA
MYLAR CAPA.
PS POLYSTYROL CAPA.
P POLYESTER CAPA.
ELECTROLYTIC CAPA.

Measure the voltages of transistors in recording mode.


Servo/Audio Circuit Board Assy

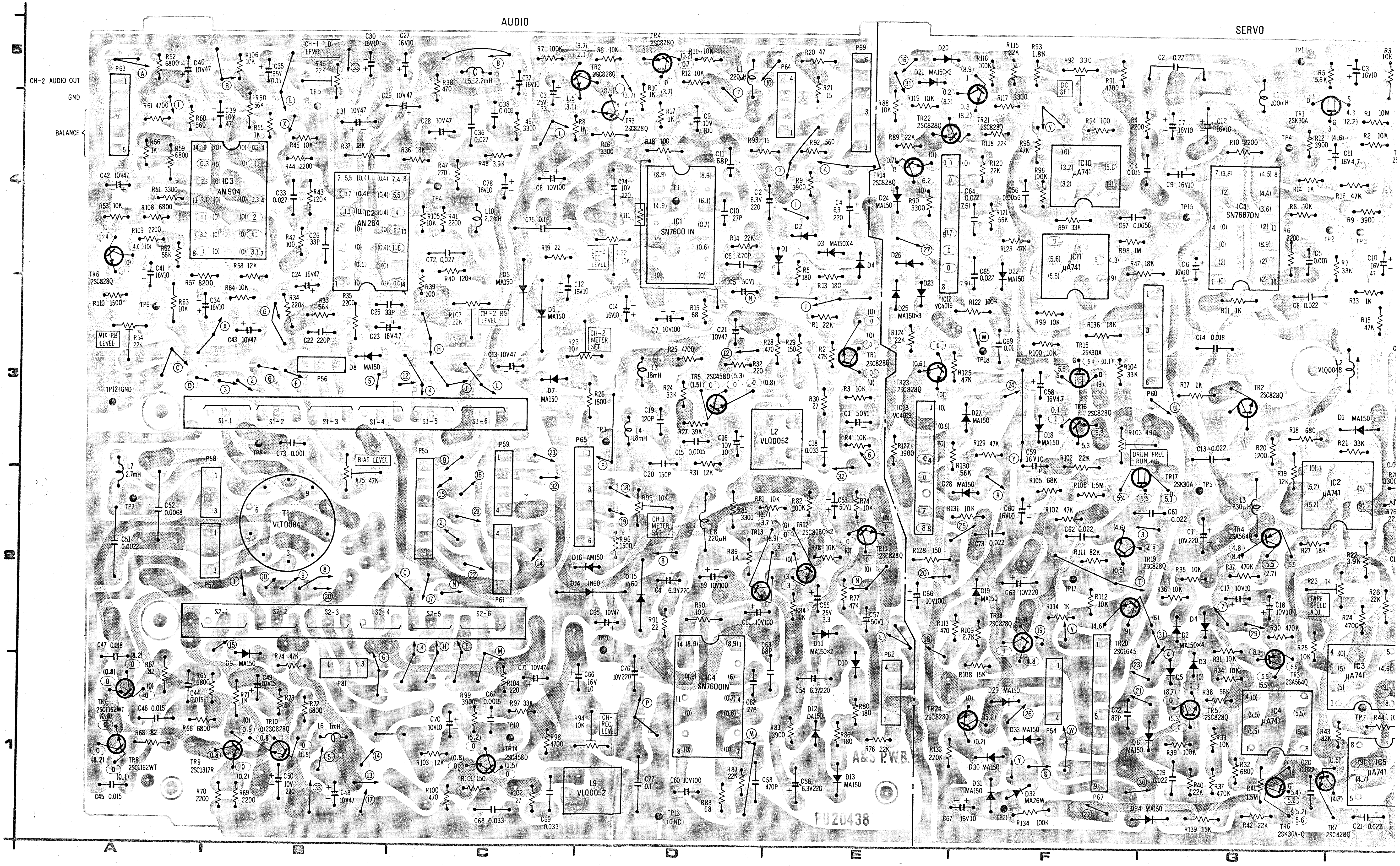
Connector Panel Circuit Board Assy

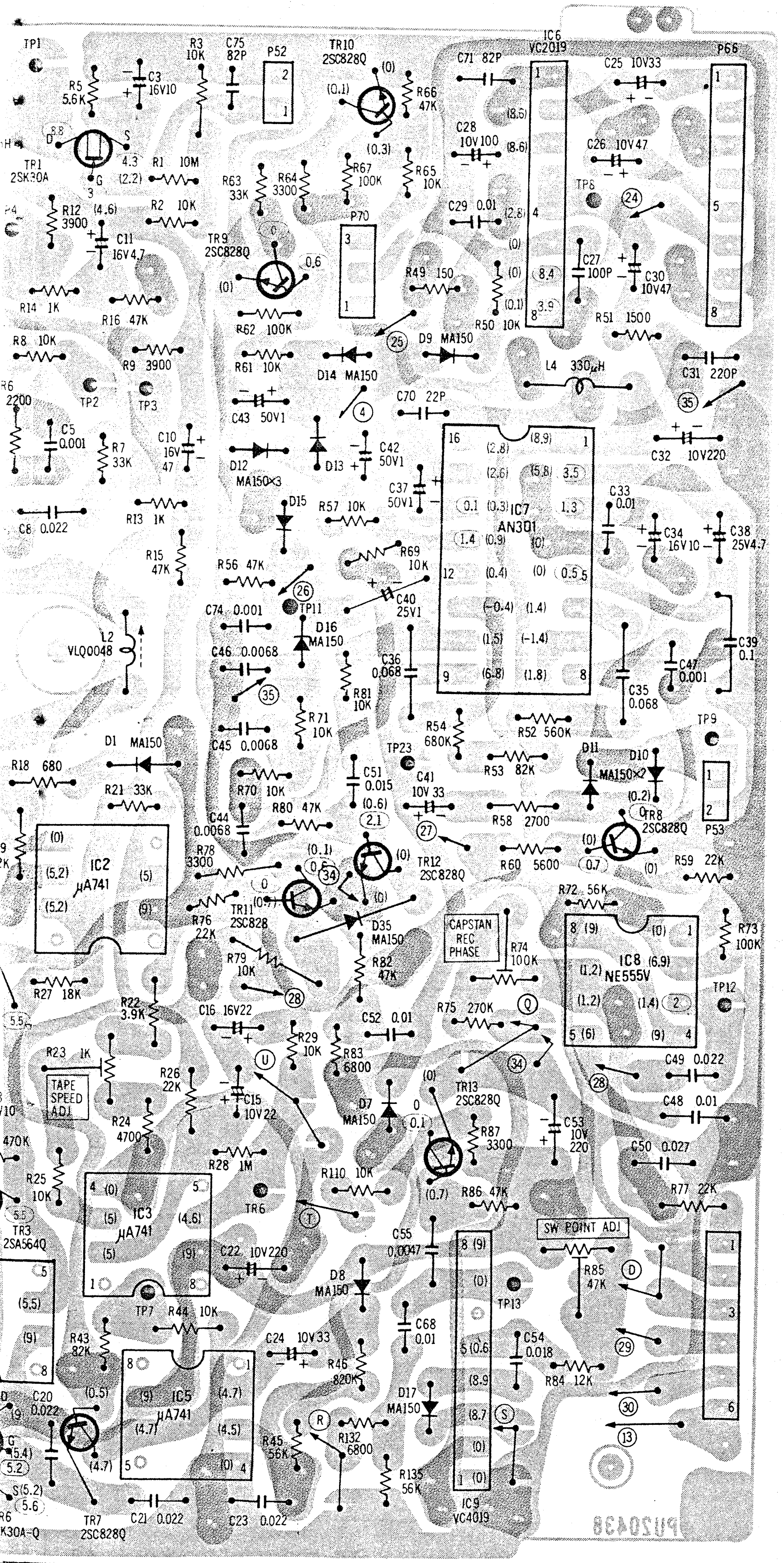

TP5 CH-1 P.B OUT
R46 CH-1 OUT
TP1 CH-2 AUDIO OUT
R107 BIAS LEVEL
R22 CH-2 REC LEVEL
TP6
R54 BIAS LEVEL
R23 CH-2 METER SET
TP3 CH-2 BIAS LEVEL
TP2 CH-2 REC AMP OUT
TP7 AUDIO ERASE LEVEL
R75 BIAS LEVEL
R95 CH-1 METER
TP9 CH-1 AUDIO OUT
TP10 CH-1 REC AMP OUT
R94 CH-1 REC
R92 DC SET
TP1 CAP FG
TP4
TP3
TP8 SYNC IN
TP15 DPUM ERROR
TP2
TP16 SIG DET
TP23 COUNT DOWN MULTI
TP9 CTL. PULSE
TP12
R103 DRUM FREE RUN ADJ.
R74 CAP REC PHASE
TP17 DRUM SAMPLING
R23 TAPE SPEED
R85
TP7 CAP SAMPLING
TP13 DRUM REC PHASE

Servo Control (VEP0277)	
TR1	G-4
TR2	G-3
TR3	G-2
TR4	G-2
TR5	G-1
TR6	G-1
TR7	H-1
TR8	I-3
TR9	H-4
TR10	H-5
TR11	H-2
TR12	H-3
TR13	I-2
TR14	E-4
TR15	F-3
TR16	F-3
TR17	G-3
TR18	F-2
TR19	F-2
TR20	F-2
TR21	F-5
TR22	E-4
TR23	E-3
TR24	F-1
IC1	G-4
IC2	H-2
IC3	H-2
IC4	G-1
IC5	H-1
IC6	I-4
IC7	I-3
IC8	I-2
IC9	I-1
IC10	F-4
IC11	F-4
IC12	E-4
IC13	E-3

Audio Circuit (VEP0277)	
TR1	E-3
TR2	D-5
TR3	D-4
TR4	D-5
TR5	D-3
TR6	A-4
TR7	A-1
TR8	A-1
TR9	B-1
TR10	B-1
TR11	E-2
TR12	E-2
TR13	D-2
TR14	C-1

SERVO & AUDIO CIRCUIT BOARD (VEP0277B1)


AUDIO
SERVO
CH-2 AUDIO OUT
GND
BALANCE
MIX PB LEVEL
CH-1 P.B LEVEL
CH-2 P.B LEVEL
CH-2 REC LEVEL
CH-2 METER SET
CH-1 METER SET
CH-1 REC LEVEL
BIAS LEVEL
DC SET
DRUM FREE RUN ADJ.
TAPE SPEED ADJ.
TP12 (GND)
TP13 (GND)
IC3 AN904
IC2 AN264
IC1 SN7600 IN
IC4 SN7600IN
IC10 μA741
IC11 μA741
IC12 VC4019
IC13 VC4019
IC1 SN76670N
IC2 μA741
IC3 μA741
IC4 μA741
IC5 μA741
T1 VLT0084
L2 VLQ0052
L9 VLQ0052
L2 VLQ0048
S1-1
S1-2
S1-3
S1-4
S1-5
S1-6
S2-1
S2-2
S2-3
S2-4
S2-5
S2-6
P55
P56
P57
P58
P59
P60
P61
P62
P63
P64
P65
P67
P69
P81
A&S P.W.B.
PU20438
A
B
C
D
E
F
G
5
4
3
2
1


TP1
R3 10K
C75 82P
P52
TR10 2SC828Q
IC6 VC2019
C71 82P
C25 10V33
P66
R5 5.6K
C3 16V10
R66 47K
TP1 2SK30A
R1 10M
R2 10K
R12 3900
C11 16V4.7
C28 10V100
C26 10V47
R63 33K
R64 3300
R67 100K
R65 10K
C29 0.01
TP8
P70
TR9 2SC828Q
R49 150
C27 100P
C30 10V47
R14 1K
R16 47K
R62 100K
R50 10K
R51 1500
R8 10K
R9 3900
R61 10K
D14 MA150
D9 MA150
L4 330μH
TP2
TP3
C43 50V1
C70 22P
C31 220P
C5 0.001
R7 33K
C10 16V 47
D12 MA150×3
D13
C42 50V1
IC7 AN301
C32 10V220
C8 0.022
R13 1K
D15
R57 10K
C37 50V1
C33 0.01
C34 16V10
C38 25V4.7
R15 47K
R56 47K
R69 10K
TP11
C40 25V1
C74 0.001
L2 VLQ0048
C46 0.0068
D16 MA150
C36 0.068
C47 0.001
C39 0.1
C35 0.068
R81 10K
R71 10K
TP9
D1 MA150
C45 0.0068
R54 680K
R52 560K
TP23
D11
D10
MA150×2
R18 680
R21 33K
R70 10K
C51 0.015
R53 82K
C41 10V 33
C44 0.0068
R80 47K
R58 2700
TR8 2SC828Q
P53
IC2 μA741
R78 3300
TR12 2SC828Q
R60 5600
R59 22K
R72 56K
TR11 2SC828
R76 22K
D35 MA150
CAPSTAN REC PHASE
R74 100K
IC8 NE555V
R73 100K
R79 10K
R82 47K
R27 18K
R22 3.9K
TP12
C16 16V22
C52 0.01
R75 270K
R29 10K
R83 6800
C49 0.022
R23 1K
TAPE SPEED ADJ
R26 22K
C15 10V22
TR13 2SC828Q
R87 3300
D7 MA150
C53 10V 220
C48 0.01
R24 4700
R28 1M
C50 0.027
R25 10K
IC3 μA741
R110 10K
R86 47K
R77 22K
TR6
TR3 2SA564Q
C55 0.0047
SW POINT ADJ
C22 10V220
D8 MA150
TP13
R85 47K
TP7
R44 10K
C68 0.01
R43 82K
C24 10V33
C54 0.018
R46 820K
R84 12K
C20 0.022
IC5 μA741
D17 MA150
R45 56K
R132 6800
R135 56K
TR7 2SC828Q
C21 0.022
C23 0.022
IC9 VC4019
K30A-Q
PU20438
H
I

AUDIO CIRCUIT SCHEMATIC

P59 (Audio C.B.A)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	F.R 9V	S123-1	Audio Limiter SW
2	Audio Limiter Off	S123-2	Audio Limiter SW
3	F.R & AF.R. 9V	S123-3	Audio Limiter SW
4	Audio Limiter Off	S123-4	Audio Limiter SW

P61 (Audio C.B.A)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	F.R & AF.R. 9V	P76-1	Mic Amp
2	GND	P76-2	Mic Amp
3	F.R 9V	P76-3	Mic Amp
4	GND	P76-4	Mic Amp

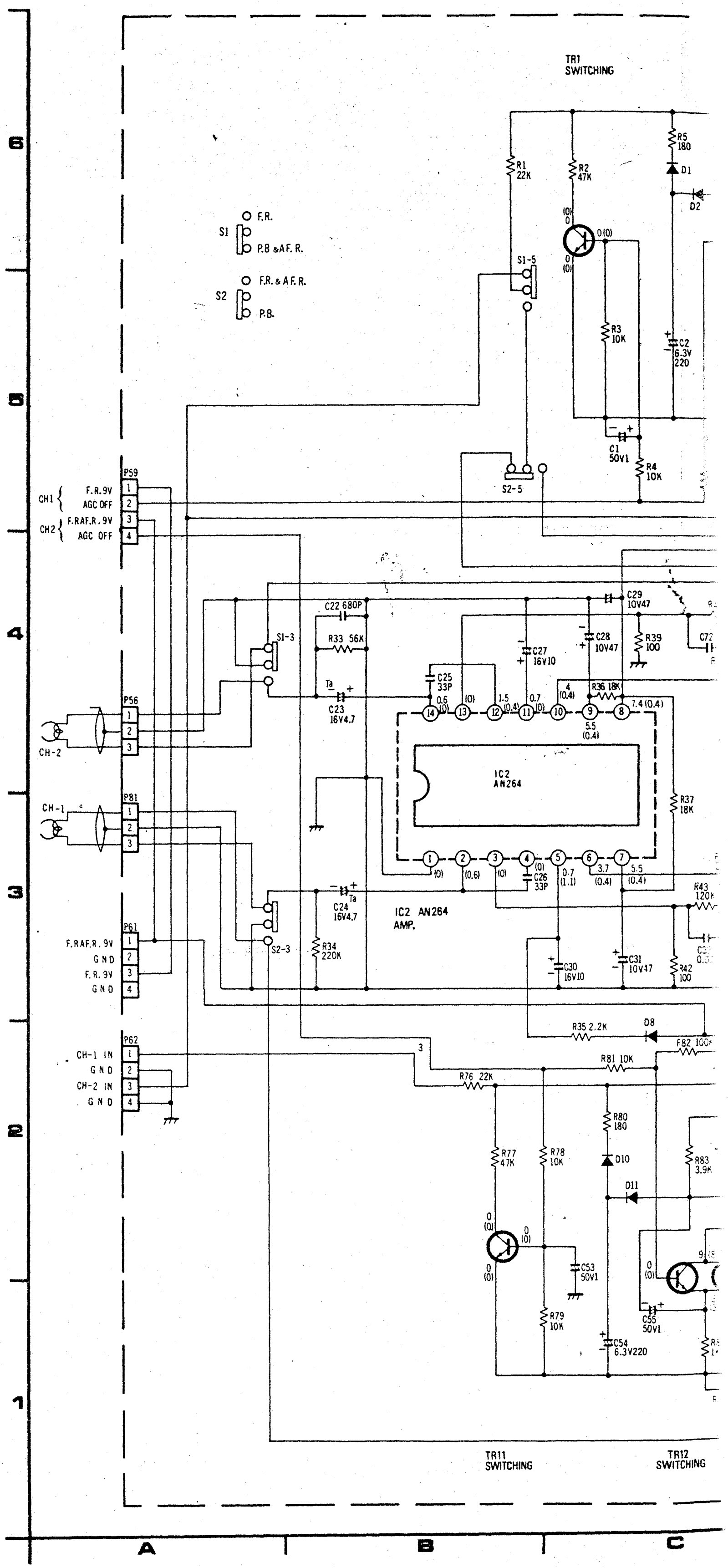
P62 (Audio C.B.A)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	CH-1 In	P79-1	Mic Amp
2	GND	—	Mic Amp
3	CH-2 In	P79-3	Mic Amp
4	GND	—	Mic Amp

P63 (Audio C.B.A)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	CH-2 Audio Out	J14	Front Panel
2	GND	J15	Front Panel
3	Audio Balance	R102-1	Front Panel
4	Audio Balance	P102-2	Front Panel
5	Audio Balance	R102-3	Front Panel

P64 (Audio C.B.A)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	—	—	—
2	CH-1 Earphone	J105	Earphone Jack
3	CH-2 Earphone	J106	Earphone Jack
4	—	—	—

P65 (Audio C.B.A)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	CH-2 Audio	S121-A2	Meter Select SW
2	GND	—	Meter Select SW
3	Servo	S121-S	Meter Select SW
4	GND	—	Meter Select SW
5	CH-1 Audio	S121-A1	Meter Select SW
6	GND	—	—

P69 (Audio C.B.A)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	CH-2 Audio In	J13	Connector Panel
2	GND	—	Connector Panel
3	CH-1 Audio Out	J15	Connector Panel
4	GND	—	Connector Panel
5	CH-2 Audio Out	J17	Connector Panel
6	GND	—	Connector Panel


6
5
4
3
2
1
A
B
C
TR1 SWITCHING
R1 22K
R2 47K
R5 180
D1
D2
S1 F.R. P.B &AF. R.
S2 F.R. & AF.R. P.B.
S1-5
R3 10K
C2 6.3V 220
C1 50V1
R4 10K
S2-5
P59
CH1 F.R.9V AGC OFF
CH2 F.RAF.R. 9V AGC OFF
C22 680P
R33 56K
S1-3
C29 10V47
C28 10V47
R39 100
C27 16V10
C25 33P
R36 18K
C23 16V4.7
P56
CH-2
IC2 AN264
R37 18K
P81
CH-1
C26 33P
C24 16V4.7
IC2 AN264 AMP.
R43 120K
P61
F.RAF.R. 9V GND F.R. 9V GND
S2-3
R34 220K
C30 16V10
C31 10V47
R42 100
R35 2.2K
D8
R82 100
R81 10K
P62
CH-1 IN GND CH-2 IN GND
R76 22K
R80 180
R77 47K
R78 10K
D10
R83 3.9K
D11
C53 50V1
R79 10K
C55 50V1
C54 6.3V220
TR11 SWITCHING
TR12 SWITCHING

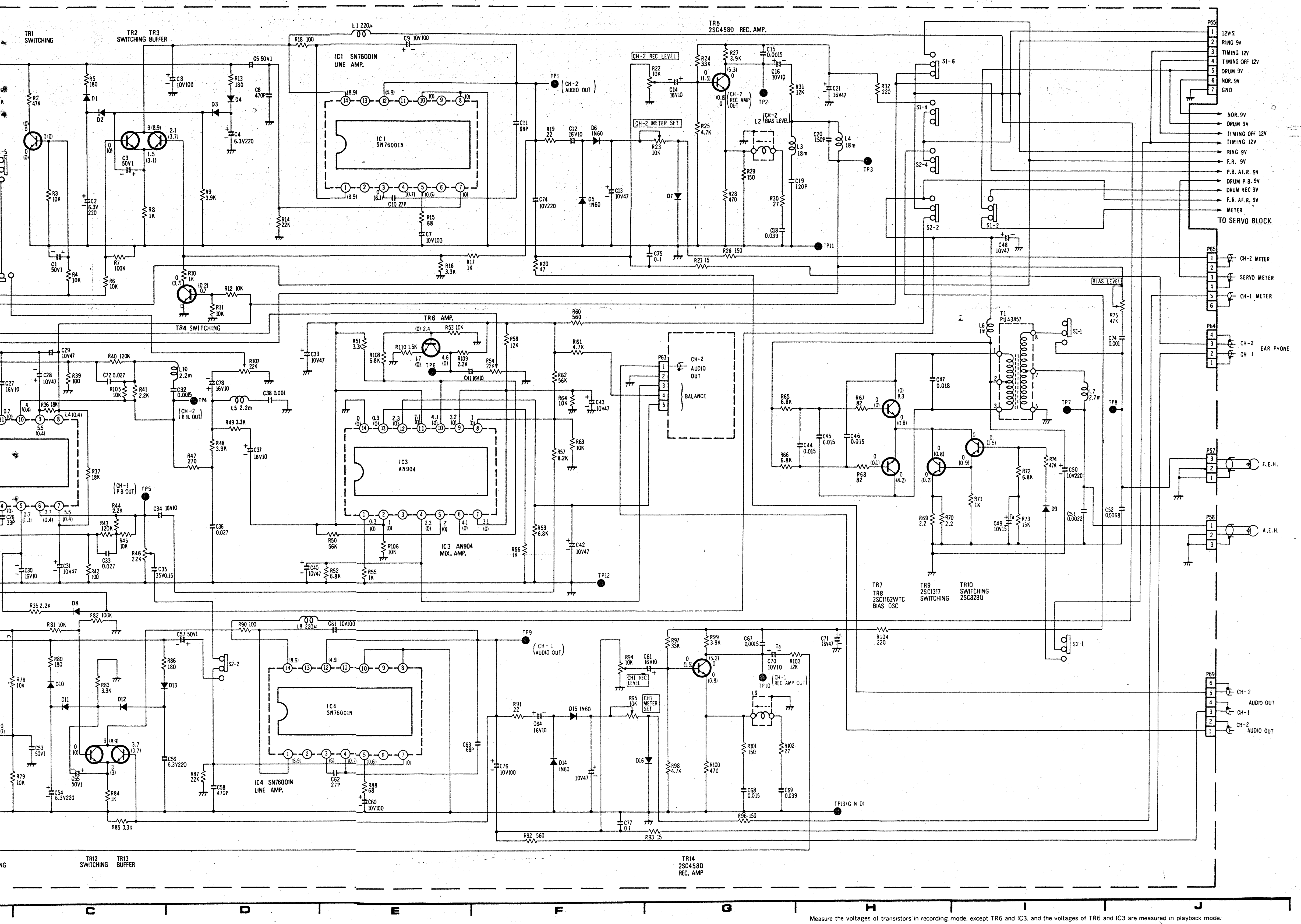
EMATIC DIAGRAM

UNLESS OTHERWISE SPECIFIED:

1. ALL TRANSISTORS ARE 2SC828Q.
2. ALL DIODES ARE MA150.
3. ALL RESISTORS ARE IN OHMS 1/4 WATT,10%.
4. ALL INDUCTORS ARE IN HENRIES.
5. ALL CAPACITORS ARE IN MICROFARADS.
   - ELECTROLYTIC CAPA.
   - Ta TANTALUME CAPA.
   - N NON POLAR CAPA.
   - MYLAR OR CERAMIC CAPA.
   - P.P. POLYPROPYLENE CAPA.
6. S1 & S2 ARE NOW P.B. MODE

S1 ○— F.R. / ○— P.B. & AF. R.

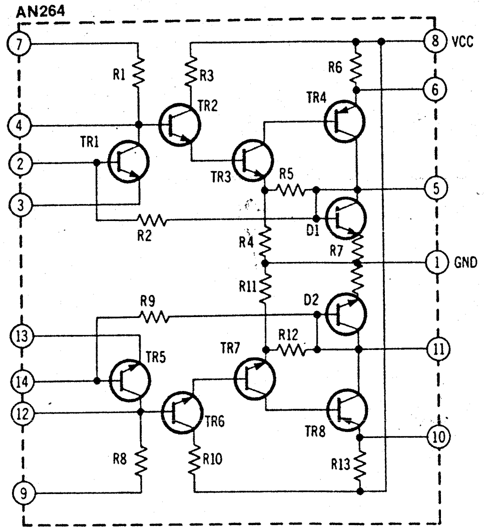
S2 ○— F.R. & AF. R. / ○— P.B.



TR1 SWITCHING
TR2 TR3 SWITCHING BUFFER
IC1 SN76001N LINE AMP.
TR5 2SC458D REC. AMP.
L1 220μ
CH-2 REC LEVEL
CH-2 METER SET
CH-2 BIAS LEVEL
CH-2 AUDIO OUT
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13 (G N D)
P55
12V(S)
RING 9V
TIMING 12V
TIMING OFF 12V
DRUM 9V
NOR. 9V
GND
F.R. 9V
P.B. AF.R. 9V
DRUM P.B. 9V
DRUM REC 9V
F.R. AF.R. 9V
METER
TO SERVO BLOCK
P65
CH-2 METER
SERVO METER
CH-1 METER
BIAS LEVEL
T1 PU43857
P64
CH-2
CH 1
EAR PHONE
P63
CH-2 AUDIO OUT
BALANCE
TR4 SWITCHING
TR6 AMP.
IC3 AN904 MIX. AMP.
CH-2 P.B. OUT
CH-1 P.B OUT
P57
F.E.H.
P58
A.E.H.
TR7 TR8 2SC1162WTC BIAS OSC
TR9 2SC1317 SWITCHING
TR10 SWITCHING 2SC828Q
S1-1
S1-2
S1-4
S1-6
S2-1
S2-2
S2-4
IC4 SN76001N LINE AMP.
L8 220μ
CH-1 AUDIO OUT
CH1 REC LEVEL
CH1 METER SET
CH-1 REC AMP OUT
P69
CH-2 AUDIO OUT
CH-1
CH-2 AUDIO OUT
TR12 TR13 SWITCHING BUFFER
TR14 2SC458D REC. AMP
C
D
E
F
G
H
I
J

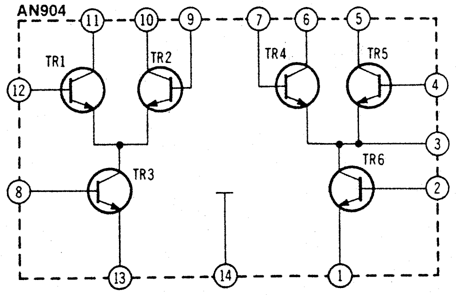
Measure the voltages of transistors in recording mode, except TR6 and IC3, and the voltages of TR6 and IC3 are measured in playback mode.

AN264



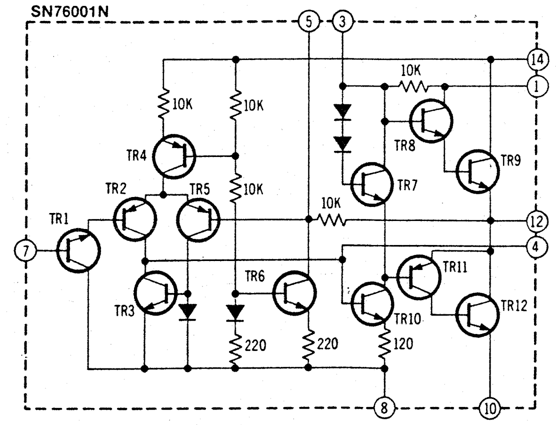
VCC
GND
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
TR1
TR2
TR3
TR4
TR5
TR6
TR7
TR8
D1
D2
1
2
3
4
5
6
7
8
9
10
11
12
13
14

AN904



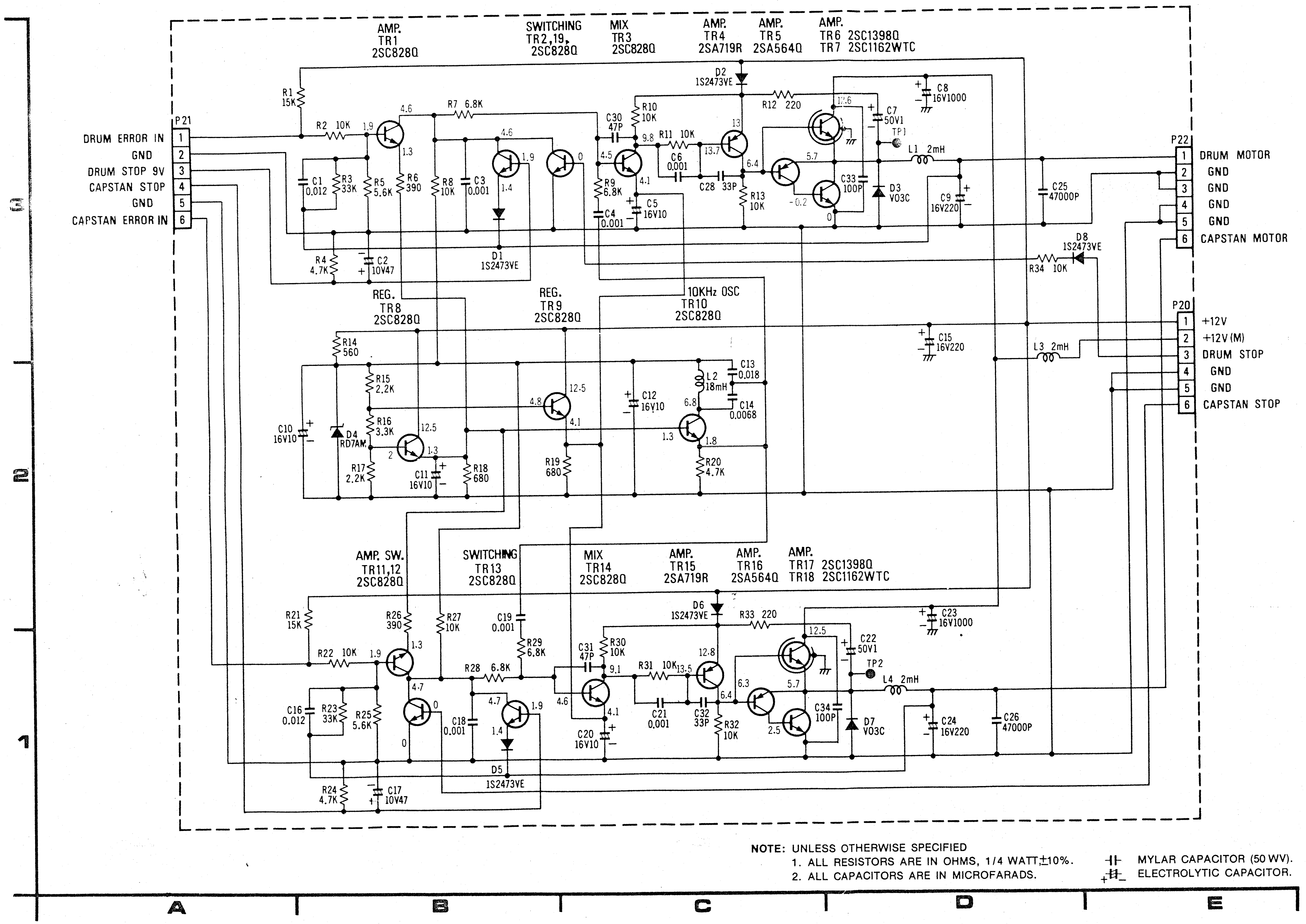
TR1
TR2
TR3
TR4
TR5
TR6
1
2
3
4
5
6
7
8
9
10
11
12
13
14

SN76001N



10K
10K
10K
10K
10K
220
220
120
TR1
TR2
TR3
TR4
TR5
TR6
TR7
TR8
TR9
TR10
TR11
TR12
1
3
4
5
7
8
10
12
14

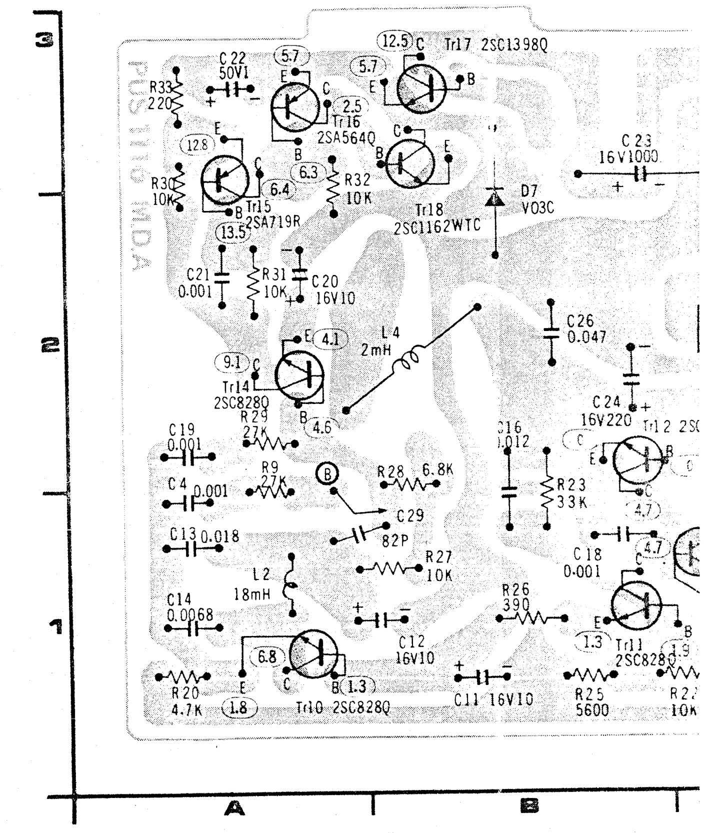
MOTOR DRIVE AMP CIRCUIT SCHEMATIC DIAGRAM


AMP. TR1 2SC828Q
SWITCHING TR2,19, 2SC828Q
MIX TR3 2SC828Q
AMP. TR4 2SA719R
AMP. TR5 2SA564Q
AMP. TR6 2SC1398Q TR7 2SC1162WTC
P21
DRUM ERROR IN 1
GND 2
DRUM STOP 9V 3
CAPSTAN STOP 4
GND 5
CAPSTAN ERROR IN 6
P22
1 DRUM MOTOR
2 GND
3 GND
4 GND
5 GND
6 CAPSTAN MOTOR
P20
1 +12V
2 +12V (M)
3 DRUM STOP
4 GND
5 GND
6 CAPSTAN STOP
R1 15K
R2 10K
R3 33K
R4 4.7K
R5 5.6K
R6 390
R7 6.8K
R8 10K
R9 6.8K
R10 10K
R11 10K
R12 220
R13 10K
C1 0.012
C2 10V47
C3 0.001
C4 0.001
C5 16V10
C6 0.001
C7 50V1
C8 16V1000
C9 16V220
C28 33P
C30 47P
C33 100P
C25 47000P
D1 1S2473VE
D2 1S2473VE
D3 VO3C
D8 1S2473VE
R34 10K
L1 2mH
TP1
REG. TR8 2SC828Q
REG. TR9 2SC828Q
10KHz OSC TR10 2SC828Q
R14 560
R15 2.2K
R16 3.3K
R17 2.2K
R18 680
R19 680
R20 4.7K
C10 16V10
C11 16V10
C12 16V10
C13 0.018
C14 0.0068
C15 16V220
L2 18mH
L3 2mH
D4 RD7AM
AMP. SW. TR11,12 2SC828Q
SWITCHING TR13 2SC828Q
MIX TR14 2SC828Q
AMP. TR15 2SA719R
AMP. TR16 2SA564Q
AMP. TR17 2SC1398Q TR18 2SC1162WTC
R21 15K
R22 10K
R23 33K
R24 4.7K
R25 5.6K
R26 390
R27 10K
R28 6.8K
R29 6.8K
R30 10K
R31 10K
R32 10K
R33 220
C16 0.012
C17 10V47
C18 0.001
C19 0.001
C20 16V10
C21 0.001
C22 50V1
C23 16V1000
C24 16V220
C26 47000P
C31 47P
C32 33P
C34 100P
D5 1S2473VE
D6 1S2473VE
D7 VO3C
L4 2mH
TP2
A
B
C
D
E
1
2
3

NOTE: UNLESS OTHERWISE SPECIFIED
1. ALL RESISTORS ARE IN OHMS, 1/4 WATT±10%.
2. ALL CAPACITORS ARE IN MICROFARADS.

⊣⊢ MYLAR CAPACITOR (50 WV).
+⊣⊢ ELECTROLYTIC CAPACITOR.

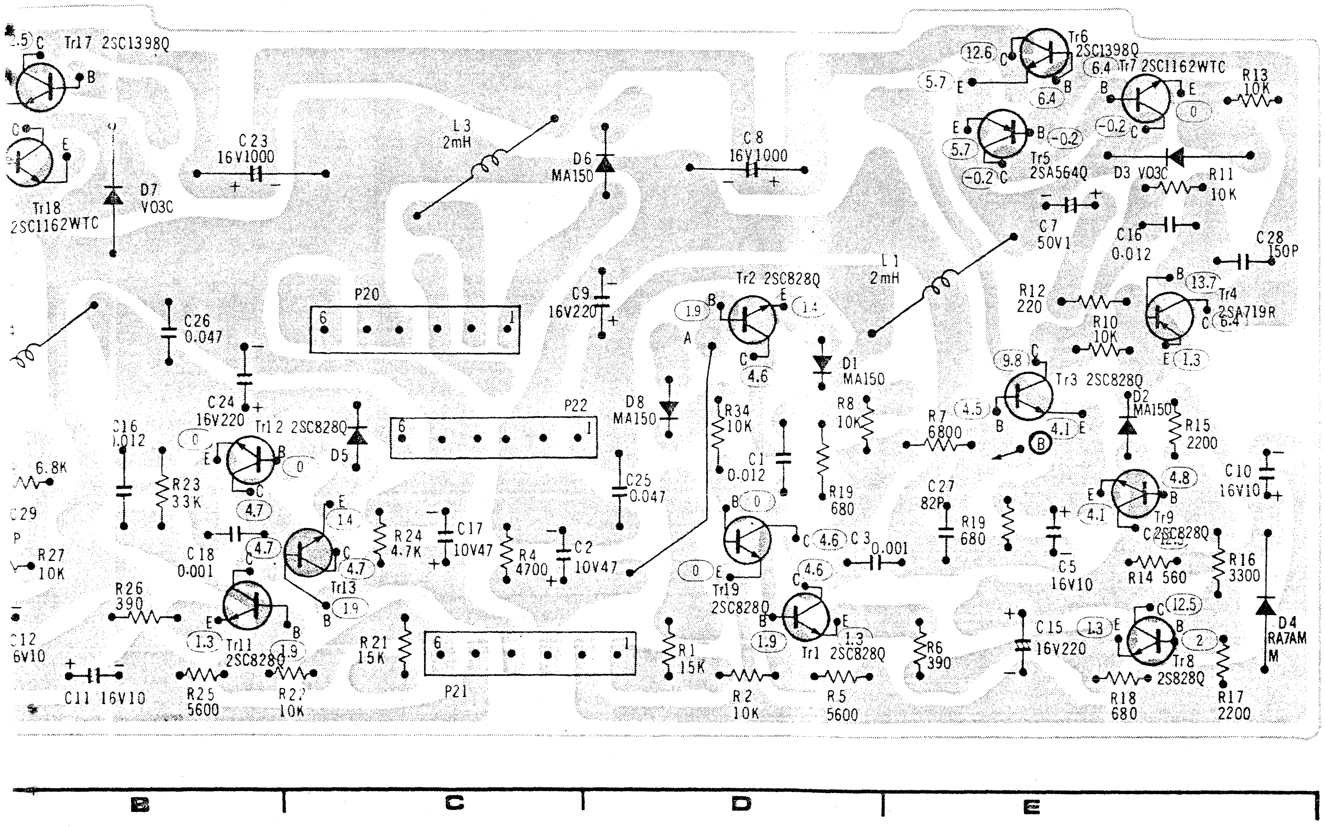
MOTOR DRIVE AMP CIR


Tr17 2SC1398Q
C22 50V1
R33 220
Tr16 2SA564Q
Tr15 2SA719R
R30 10K
R32 10K
Tr18 2SC1162WTC
C23 16V1000
D7 VO3C
C21 0.001
R31 10K
C20 16V10
L4 2mH
C26 0.047
Tr14 2SC828Q
R29 27K
C24 16V220
C19 0.001
C4 0.001
R9 27K
R28 6.8K
C16 0.012
R23 33K
C13 0.018
C29 82P
L2 18mH
R27 10K
C18 0.001
C14 0.0068
R26 390
C12 16V10
R20 4.7K
Tr10 2SC828Q
C11 16V10
Tr11 2SC828Q
R25 5600
A
B
1
2
3

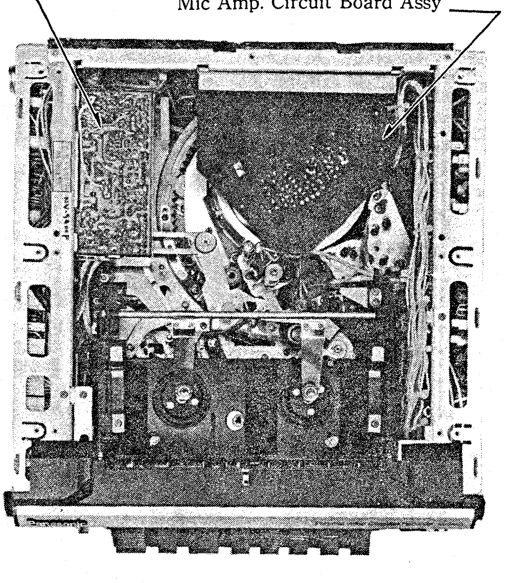
P20 (MDA C.B.A)

PIN NO.	SIGNAL NAME	DESTINATION	
1	12V	P11-1	Transport
2	12V (M)	P11-2	Transport
3	Drum Stop	P11-3	Transport
4	GND	P11-4	Transport
5	GND	P11-5	Transport
6	Capstan Stop	P11-6	Transport

IVE AMP CIRCUIT BOARD (VEP0278B1)


Tr17 2SC1398Q
Tr18 2SC1162WTC
D7 V03C
C23 16V1000
L3 2mH
D6 MA150
C8 16V1000
Tr6 2SC1398Q
Tr7 2SC1162WTC
R13 10K
Tr5 2SA564Q
D3 V03C
R11 10K
C7 50V1
C16 0.012
C28 150P
L1 2mH
Tr2 2SC828Q
C9 16V220
P20
C26 0.047
R12 220
R10 10K
Tr4 2SA719R
Tr3 2SC828Q
D2 MA150
R15 2200
D1 MA150
R8 10K
R7 6800
C24 16V220
Tr12 2SC828Q
D5
P22
D8 MA150
R34 10K
C1 0.012
C25 0.047
R23 33K
C27 82P
R19 680
C10 16V10
Tr9 2SC828Q
C18 0.001
Tr13
R24 4.7K
C17 10V47
R4 4700
C2 10V47
Tr19 2SC828Q
C3 0.001
C5 16V10
R14 560
R16 3300
R27 10K
R26 390
Tr11 2SC828Q
R21 15K
P21
R1 15K
Tr1 2SC828Q
R6 390
C15 16V220
Tr8 2S828Q
D4 RA7AM
C12 6V10
C11 16V10
R25 5600
R22 10K
R2 10K
R5 5600
R18 680
R17 2200
B
C
D
E

DESTINATION
sport
sport
sport
sport
sport
sport


Motor Drive Circuit Board Assy
Mic Amp. Circuit Board Assy

Motor Drive Circuit (VEP0278)	
TR1	D-1
TR2	D-2
TR3	E-2
TR4	E-2
TR5	E-3
TR6	E-3
TR7	E-3
TR8	E-1
TR9	E-1
TR10	A-1
TR11	B-1
TR12	B-2
TR13	C-1
TR14	A-2
TR15	A-3
TR16	A-3
TR17	B-3
TR18	B-3
TR19	D-1

TRA

P1 (Transport C.B.A)

PIN NO.	SIGNAL NAME	DESTINATION	
1	12V (S)	J20	Fuse Board
2	12V (M)	J14	Fuse Board
3	—	—	—
4	GND	J5	Fuse Board
5	GND	F6	Fuse Board
6	—	—	—
7	12V	J18	Fuse Board
8	12V (C)	J16	Fuse Board

P2 (Transport C.B.A)

PIN NO.	SIGNAL NAME	DESTINATION	
1	GND	J101-9	—
2	12V (C)	J101-10	—
3	Camera Audio In	J101-7	—
4	GND	—	—
5	Camera Trigger	J101-6	—

P3 (Transport C.B.A)

PIN NO.	SIGNAL NAME	DESTINATION	
1	9V	Tr101-E	—
2	Control	Tr101-B	—
3	12V	Tr101-C	—

P4 (Transport C.B.A)

PIN NO.	SIGNAL NAME	DESTINATION	
1	9V	P86-1	Recording SW
2	LED	P86-2	Recording SW

P7 (Transport C.B.A)

PIN NO.	SIGNAL NAME	DESTINATION
1	GND	D109-Cathode
2	Alarm	D109-Anode

P9 (Transport C.B.A)

PIN NO.	SIGNAL NAME	DESTINATION	
1	Camera Power SW (2)	S107-N.C.	—
2	Camera Power SW (2)	S107-C.	—
3	Camera Audio Out	J32	Front Panel
4	GND	—	Front Panel
5	Camera Trigger In	J40	Front Panel
6	—	J121-2	—
7	Remote Out	S121-1	
8	Meter ⊖ (Battery)	—	—
9	Meter ⊕ (Battery)	—	—

P10 (Transport C.B.A)

PIN NO.	SIGNAL NAME	DESTINATION	
1	12V (C)	S101-N.O.	—
2	Camera Power SW (1)	S101-C.	—
3	Ring 9V	S102-N.O.	—
4	9V	S102-C.	—

P11 (Transport C.B.A)

PIN NO.	SIGNAL NAME	DESTINATION	
1	12V	P20-1	MDA
2	12V (M)	P20-2	MDA
3	Drum Stop	P20-3	MDA
4	GND	P20-4	MDA
5	GND	P20-5	MDA
6	Capstan Stop	P20-6	MDA

P12 (Transport C.B.A)

PIN NO.	SIGNAL NAME	DESTINATION	
1	Pinch 12V	P49-1	Recording SW
2	12V	P49-2	Recording SW
3	Ring 9V	P49-3	Recording SW
4	GND	P49-4	Recording SW

P13 (Transport C.B.A)

PIN NO.	SIGNAL NAME	DESTINATION	
1	GND	P54-1	Servo
2	Pause	P54-2	Servo
3	Pinch Solenoid Timing Pulse	P54-3	Servo
4	Still 9V	P54-4	Servo

P14 (Transport C.B.A)

PIN NO.	SIGNAL NAME	DESTINATION	
1	12V (S)	P55-1	Servo
2	Ring 9V	P55-2	Servo
3	Timing 12V	P55-3	Servo
4	Timing Off 12V	P55-4	Servo
5	Drum 9V	P55-5	Servo
6	9V	P55-6	Servo
7	GND	P55-7	Servo

P15 (Transport C.B.A)

PIN NO.	SIGNAL NAME	DESTINATION	
1	Pinch 12V	S103-C	—
2	Timing 12V	S103-N.O.	—
3	Timing Off 12V	S103-N.C.	—
4	Drum 9V	S104-N.O.	—
5	9V	S104-C	—

P16 (Transport C.B.A)

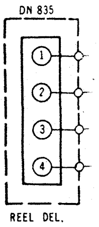
PIN NO.	SIGNAL NAME	DESTINATION	
1	GND	P51-1	Dew Sensor
2	Dew Detect In	P51-2	Dew Sensor
3	GND	—	—
4	9V	P51-4	Dew Sensor

P18 (Transport C.B.A)

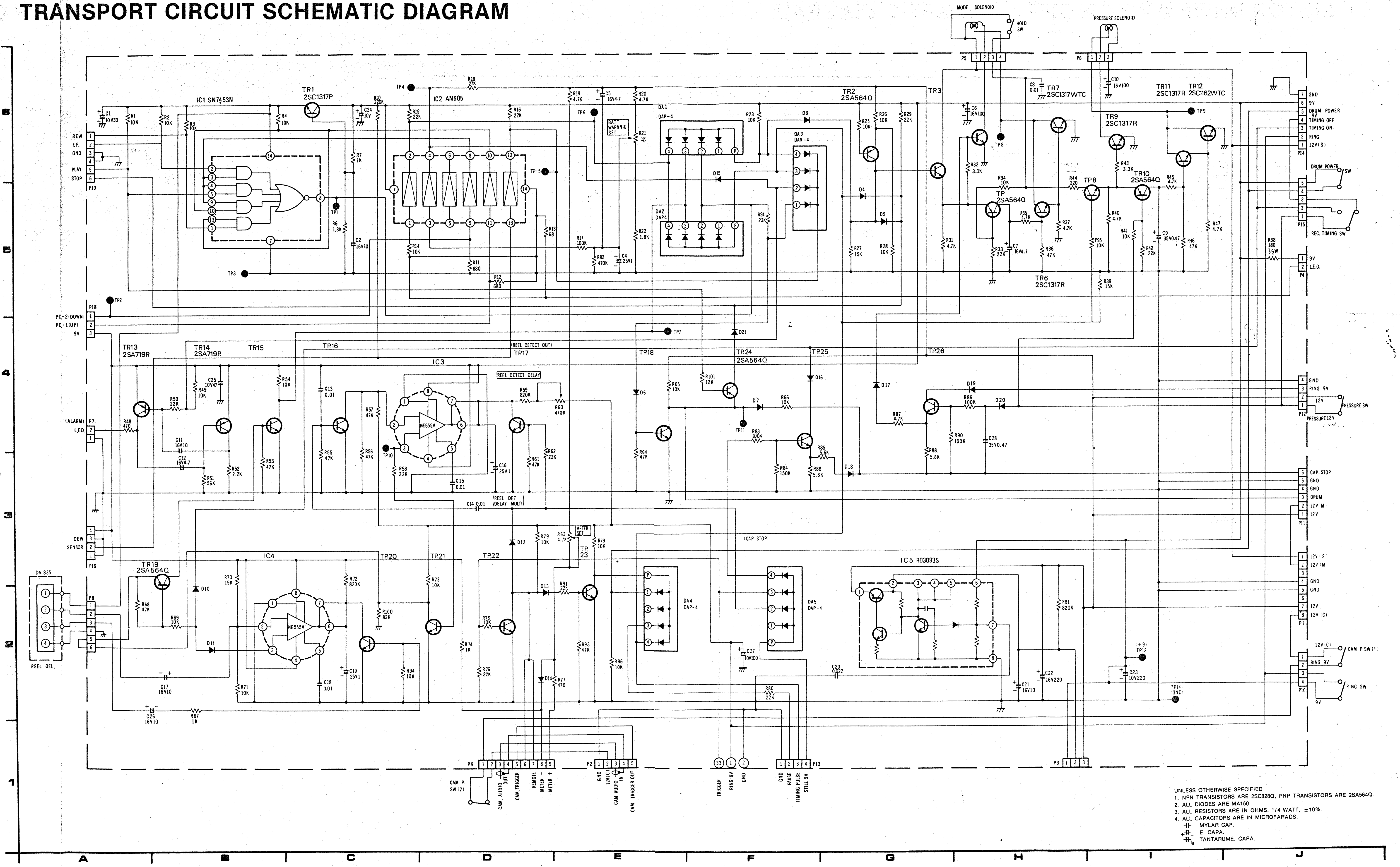
PIN NO.	SIGNAL NAME	DESTINATION
1	Photo Diode 2	Photo Diode-PD2
2	Photo Diode 1	Photo Diode-PD1
3	9V	Photo Diode-9V

P19 (Transport C.B.A)

PIN NO.	SIGNAL NAME	DESTINATION
1	Rew	S109-N.O.
2	FF	S112-N.O.
3	GND	S109~S112-C.
4	GND	—
5	Play	S110-N.O.
6	Stop	S111-N.O.

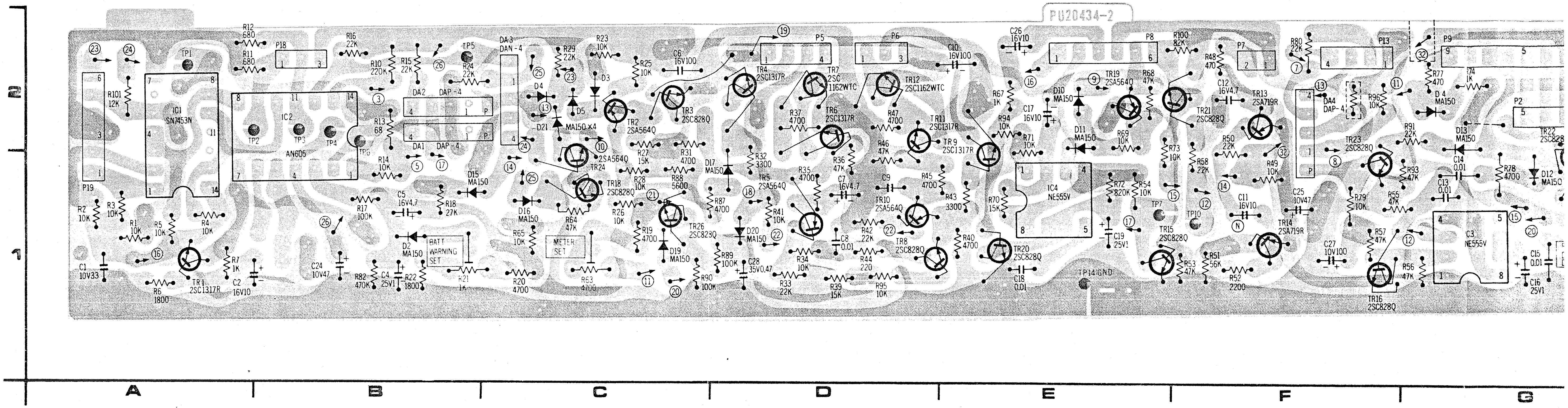


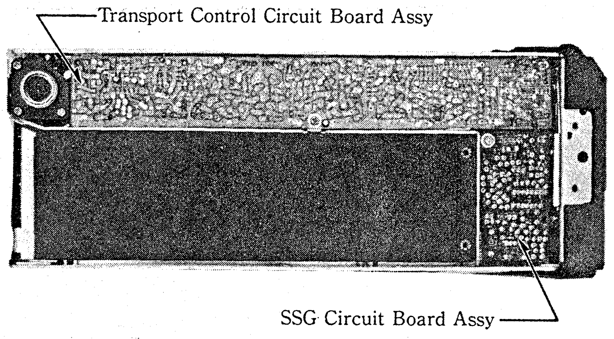
TRANSPORT CIRCUIT SCHEMATIC DIAGRAM

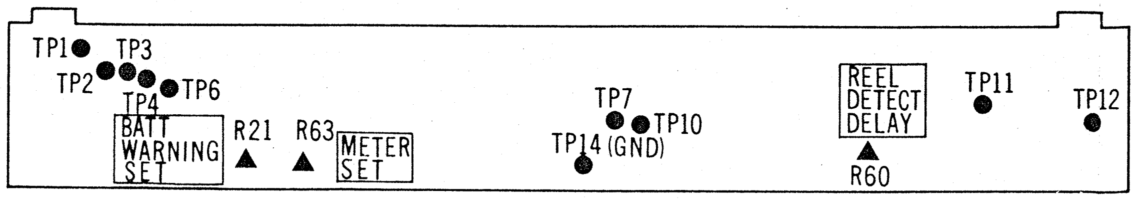

MODE SOLENOID
HOLD SW
PRESSURE SOLENOID
P5
P6
IC1 SN7453N
TR1 2SC1317P
IC2 AN605
TR2 2SA564Q
TR3
TR7 2SC1317WTC
TR11 2SC1317R
TR12 2SC1162WTC
TR9 2SC1317R
TR10 2SA564Q
TR8
TP 2SA564Q
TR6 2SC1317R
DA1 DAP-4
DA2 DAP4
DA3 DAN-4
BATT WARNNIG SET
REW
E.F.
GND
PLAY
STOP
P19
P18
PD-2(DOWN)
PD-1(UP)
9V
TP1
TP2
TP3
TP4
TP-5
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP14
TR13 2SA719R
TR14 2SA719R
TR15
TR16
TR17
TR18
TR24 2SA564Q
TR25
TR26
(REEL DETECT OUT)
IC3
NE555V
REEL DETECT DELAY
(REEL DET DELAY MULTI)
(ALARM) P7
L.E.D.
DEW SENSOR
P16
DN 835
REEL DEL.
P8
TR19 2SA564Q
IC4
NE555V
TR20
TR21
TR22
TR 23
METER SET
(CAP STOP)
DA4 DAP-4
DA5 DAP-4
IC5 RD3093S
GND
9V
DRUM POWER 9V
TIMING OFF
TIMING ON
RING
12V(S)
P14
DRUM POWER SW
REC. TIMING SW
P15
L.E.D.
P4
RING 9V
12V
PRESSURE SW
PRESSURE 12V
P12
CAP. STOP
DRUM
12V(M)
P11
12V(S)
12V(M)
P1
12V(C)
CAM P SW(1)
RING SW
P10
P9
CAM P. SW(2)
CAM. AUDIO OUT
CAM. TRIGGER
REMOTE
METER +
METER +
P2
GND
12V(C)
CAM AUDIO IN
CAM TRIGGER OUT
TRIGGER
RING 9V
GND
PAUSE
TIMING PULSE
STILL 9V
P13
P3
A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
6

UNLESS OTHERWISE SPECIFIED
1. NPN TRANSISTORS ARE 2SC828Q, PNP TRANSISTORS ARE 2SA564Q.
2. ALL DIODES ARE MA150.
3. ALL RESISTORS ARE IN OHMS, 1/4 WATT, ±10%.
4. ALL CAPACITORS ARE IN MICROFARADS.
MYLAR CAP.
E. CAPA.
TANTARUME. CAPA.

TRANSPORT CIRCUIT BOARD (VEP0276B1)

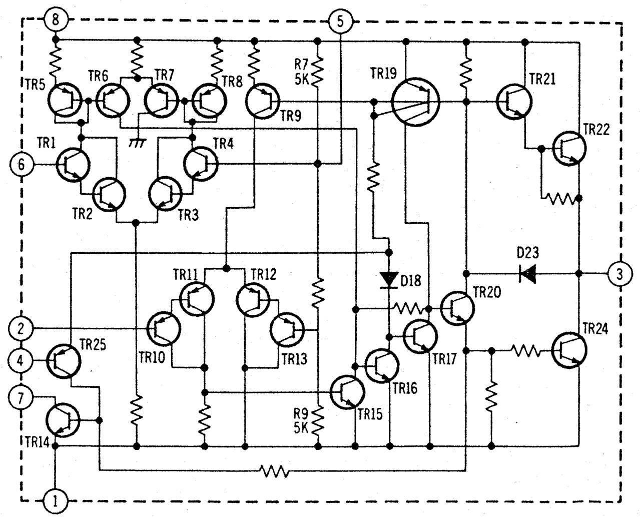

PU20434-2
IC1 SN7453N
IC2 AN605
IC4 NE555V
IC3 NE555V
TP1
TP2
TP3
TP4
TP5
TP7
TP10
TP14 GND
BATT WARNING SET
METER SET
P5
P6
P7
P8
P9
P13
P18
P19
2
1
A
B
C
D
E
F
G

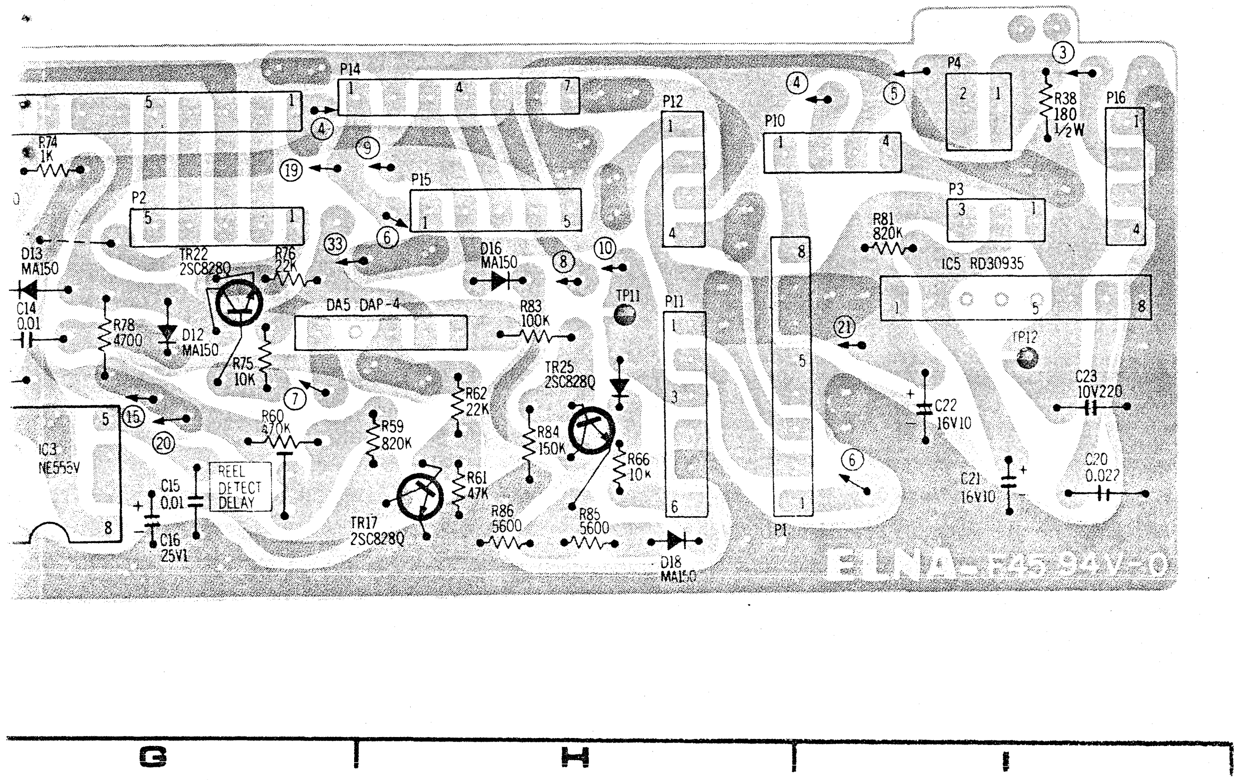

Transport Control Circuit Board Assy
SSG Circuit Board Assy


TP1
TP2
TP3
TP4
TP6
BATT WARNING SET
R21
R63
METER SET
TP7
TP10
TP14 (GND)
REEL DETECT DELAY
R60
TP11
TP12

Transport Circuit	
TR1	A-1
TR2	C-2
TR3	C-2
TR4	D-2
TR5	D-1
TR6	D-2
TR7	D-2
TR8	D-1
TR9	E-1
TR10	D-1
TR11	D-2
TR12	D-2
TR13	F-2
TR14	F-1
TR15	E-1
TR16	F-1
TR17	H-1
TR18	C-1
TR19	E-2
TR20	E-1
TR21	F-2
TR22	G-1
TR23	F-1
TR24	C-1
TR25	H-1
TR26	C-1
IC1	A-2
IC2	B-2
IC3	G-1
IC4	E-1
IC5	I-1

NE555V


8
5
6
3
2
4
7
1
TR1
TR2
TR3
TR4
TR5
TR6
TR7
TR8
TR9
TR10
TR11
TR12
TR13
TR14
TR15
TR16
TR17
TR19
TR20
TR21
TR22
TR24
TR25
R7 5K
R9 5K
D18
D23


P14
1
4
7
5
1
R74
1K
P2
5
1
D13
MA150
C14
0.01
R78
4700
D12
MA150
TR22
2SC828Q
R76
22K
R75
10K
R60
470K
IC3
NE555V
5
8
C15
0.01
C16
25V1
REEL
DETECT
DELAY
DA5 DAP-4
P15
1
5
D16
MA150
R83
100K
R62
22K
R59
820K
R61
47K
TR17
2SC828Q
TR25
2SC828Q
R84
150K
R66
10K
R86
5600
R85
5600
D18
MA150
TP11
P12
1
4
P11
1
3
6
P10
1
4
P1
8
5
1
P4
2
1
R38
180
1/2W
P16
1
4
P3
3
1
R81
820K
IC5 RD30935
1
5
8
TP12
C22
16V10
C23
10V220
C21
16V10
C20
0.027
③
④
⑤
⑥
⑦
⑧
⑨
⑩
⑮
⑲
⑳
㉑
㉝
ELNA E45 94V-0
G
H
I

VOLTAGE CHART OF TRANSISTOR AND IC

TRANSISTOR REF NO.	TR1			TR2			TR3			TR4			TR5			TR6			TR7			TR8		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
REC	5.0	9.0	5.7	6.2	4.3	9.0	3.6	12.6	4.3	0	0.1	0.8	3.6	0	8.6	0	11.9	0	0	11.9	0	4.0	12.2	4.6
PLAY	5.0	9.0	5.7	6.2	4.3	9.0	3.6	12.6	4.3	0	0.1	0.8	3.6	0	8.6	0	11.9	0	0		0	4.0	12.2	4.6
FF	5.0	9.0	5.7	6.4	4.2	9.0	3.5	12.8	4.2	0	0.1	0.8	3.5	0	8.7	0	12.1	0	0	12.1	0	0	12.8	0
REW	5.0	9.0	5.7	6.4	4.2	9.0	3.5	12.8	4.2	0	0.1	0.8	3.5	0	8.7	0	12.1	0	0	12.1	0	0	12.8	0

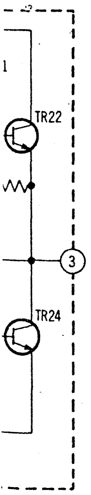
TRANSISTOR REF NO.	TR9			TR10			TR11			TR12			TR13			TR14			TR15			TR16		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
REC	0	0.1	0.8	4.0	0	8.5	0	12.0	0	0	12.0	0	9.0	0	8.96	9.0	8.9	8.3	0	9.0	0	0	4.5	0
PLAY	0	0.1	0.8	4.0	0	8.5	0	12.0	0	0	12.0	0	9.0	0	8.96	9.0	8.9	8.3	0	9.0	0	0	4.5	0
FF	0	12.8	0	0	0	0	0	12.8	0	0	12.8	0	9.0	0.9	8.96	9.0	8.9	8.3	0	9.0	0	0	0.05	0
REW	0	12.8	0	0	0	0	0	12.8	0	0	12.8	0	9.0	0.9	8.96	9.0	8.9	8.3	0	9.0	0	0	0.05	0

TRANSISTOR REF NO.	TR17			TR18			TR19			TR20			TR21			TR22			TR23			TR24		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
REC	0	0	0	0	0.05	0.7	8.0	0.15	7.9	0	0.15	0	0	8.0	0	0	0	0	0	5.3	0	0.05	0	5.0
PLAY	0	0	0	0	0.05	0.7	8.0	0.15	7.9	0	0.15	0	0	8.0	0	0	0	0	0	5.3	0	0.05	0	5.0
FF	0	0	0	0	0.05	0.7	0	0.05	0	0	0.1	0.6	0	0	0.7	0	0	0	0	0	0	0.05	0	0
REW	0	0	0	0	0.05	0.7	0	0.05	0	0	0.05	0.6	0	0	0.7	0	0	0	0	0	0	0.05	0	0

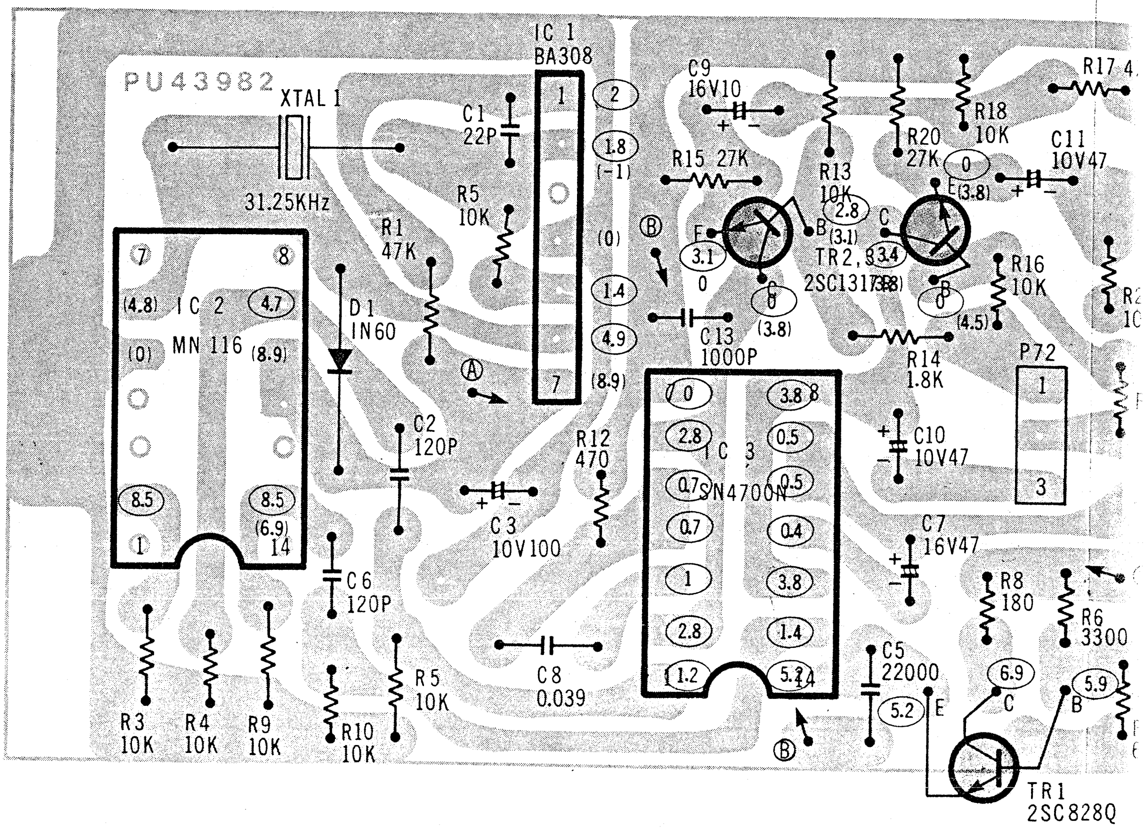
TRANSISTOR REF NO.	TR25			TR26			IC1																	
MODE	E	C	B	E	C	B	1	2	3	4	5	6	7	8	9	10	11	12	13	14				
REC	0	12.1	0	4.9	8.3	5.5	0	0	0	0	5.0		0	4.2	0	0			0	5.0				
PLAY	0	12.1	0	4.9	8.3	5.6	0	0	0	0	5.0		0	4.2	0	0			0	5.0				
FF	0	0	0	0	0	0	0	5.0	0	0	0		0	4.2	0	0			0	5.0				
REW	0	0	0	0	0	0	5.0	0	0	0	0		0	4.2	0	0			0	5.0				

TRANSISTOR REF NO.	IC2														IC3									
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	1	2	3	4	5	6	7	8		
REC	0.7	9.0	3.6	12.4	0	0	9.0	0	0	0	0	9.0	8.7	0	0	4.5	0	9.0	6.0	0	0	9.0		
PLAY	0.7	9.0	3.6	12.4	0	0	9.0	0	0	0	0	9.0	8.7	0	0	4.5	0	9.0	6.0	0	0	9.0		
FF	0.7	9.0	3.7	12.7	0	0	9.0	0	0.2	0	0	9.0	8.7	0	0	0	7.8	9.0	6.0	0	0	9.0		
RW	0.7	9.0	3.7	12.7	0	0	9.0	0	0.3	0	0	9.0	8.7	0	0	0	7.8	9.0	6.0	0	0	9.0		

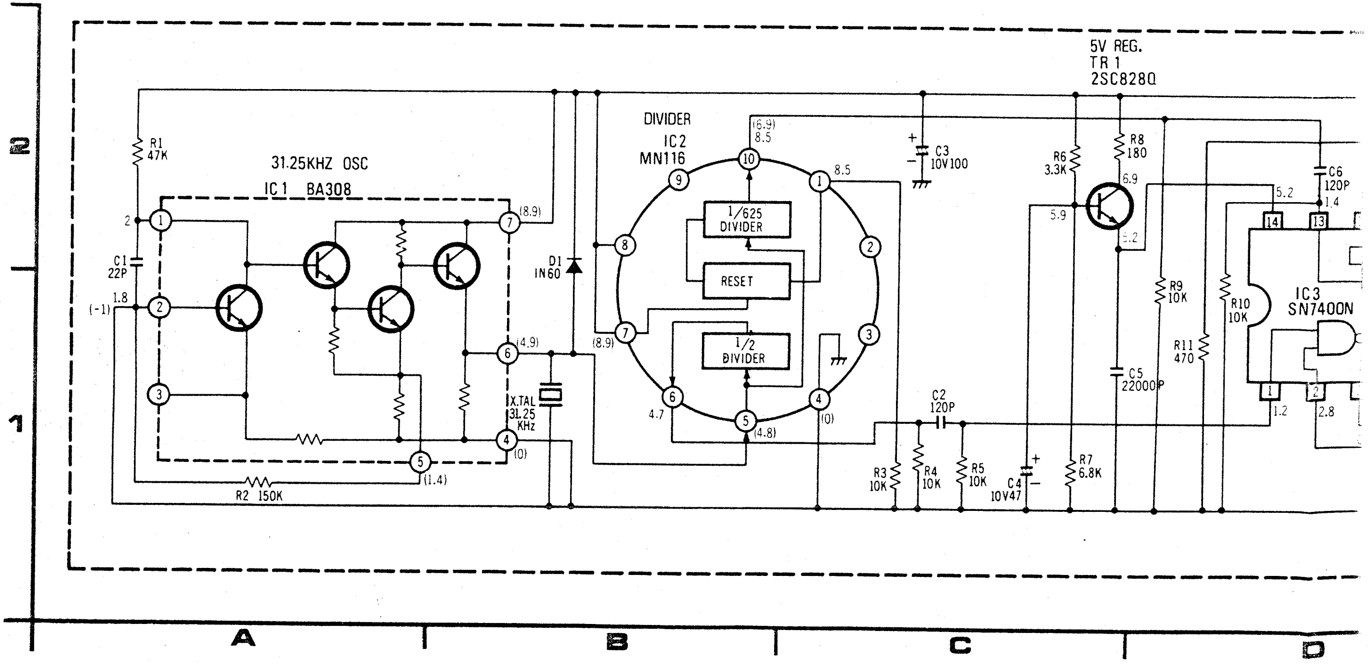
TRANSISTOR REF NO.	IC4								IC5															
MODE	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8								
REC	0	3.5	8.4	9.0	6.0	0.2	0.2	9.0	12.4	9.7				9.0	7.8	0								
PLAY	0	3.5	8.4	9.0	6.0	0.2	0.2	9.0	12.5	9.7				9.0	7.8	0								
FF	0	4.1	8.4	9.0	6.0	0.1	0.1	9.0	12.8	9.6				9.0	7.8	0								
RW	0	4.1	8.4	9.0	6.0	0.1	0.1	9.0	12.8	9.6				9.0	7.8	0								

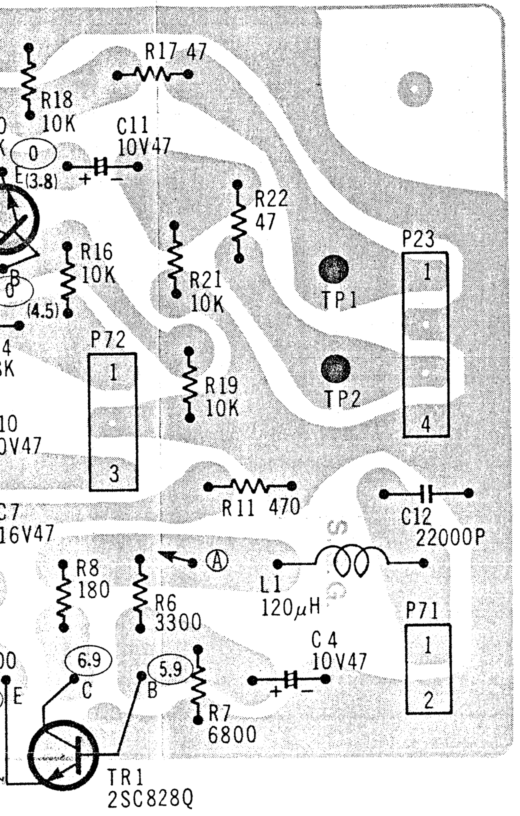

1
TR22
③
TR24

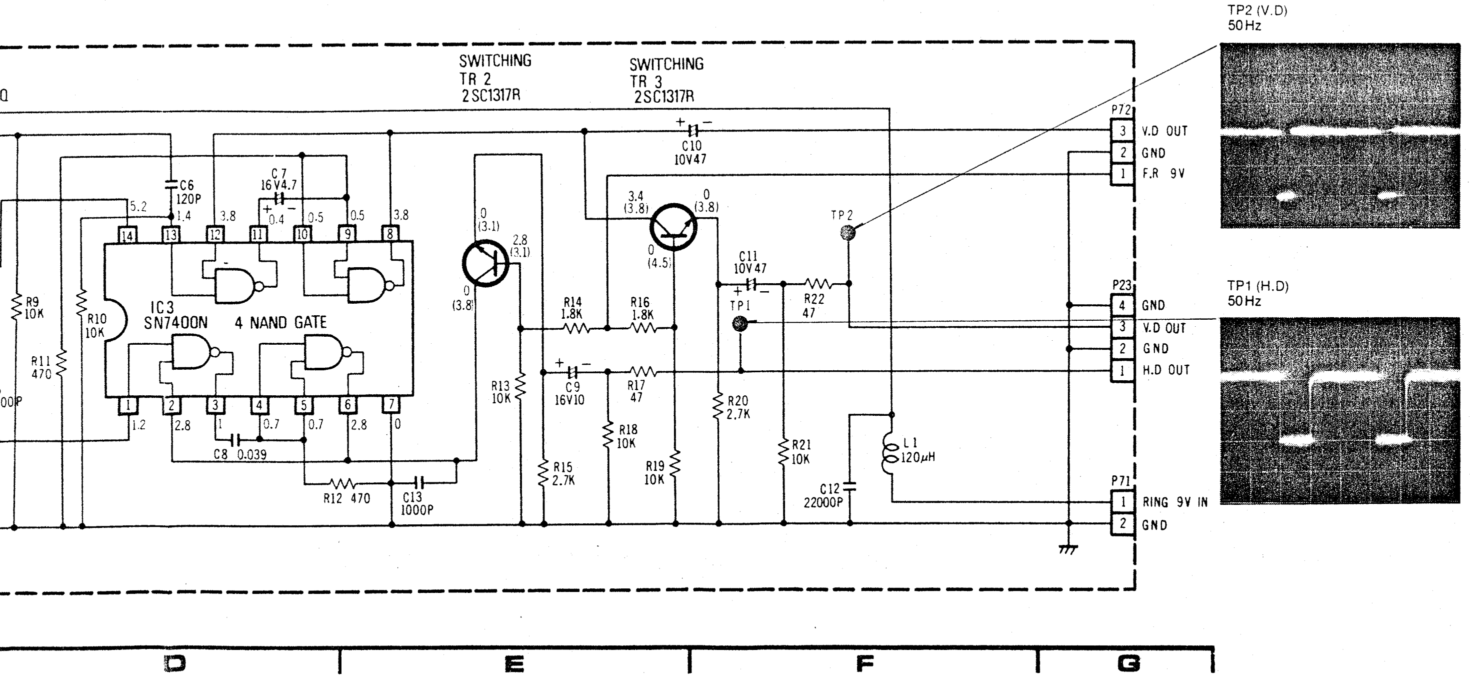
S.S.G. CIRCUIT BOARD (VEP00199B1)


PU43982
XTAL 1
31.25KHz
IC 1
BA308
C1
22P
R5
10K
R1
47K
D1
IN60
IC 2
MN 116
C2
120P
C3
10V100
C6
120P
R3
10K
R4
10K
R9
10K
R10
10K
R5
10K
C8
0.039
R12
470
C9
16V10
R15 27K
R13
10K
R20
27K
R18
10K
C11
10V47
R17
TR2, 3
2SC1317
C13
1000P
R14
1.8K
R16
10K
P72
IC 3
SN4700N
C10
10V47
C7
16V47
R8
180
R6
3300
C5
22000
TR1
2SC828Q
E
B
C
Ⓐ
Ⓑ

S.S.G. CIRCUIT SCHEMATIC DIAGRAM

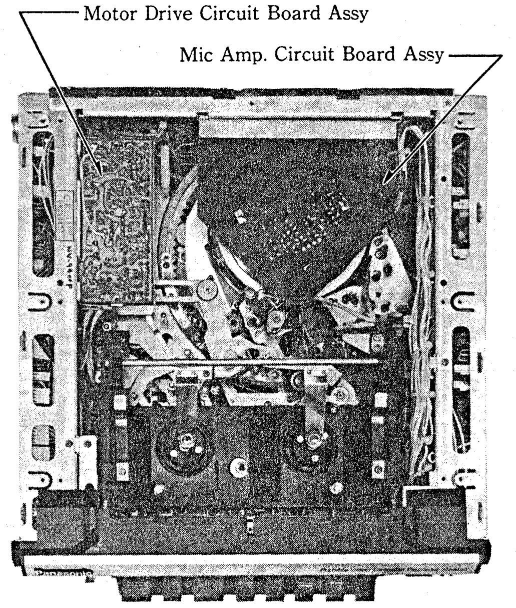

31.25KHZ OSC
IC1 BA308
R1
47K
C1
22P
R2 150K
X.TAL
31.25
KHz
D1
IN60
DIVIDER
IC2
MN116
1/625
DIVIDER
RESET
1/2
DIVIDER
C2
120P
C3
10V100
R3
10K
R4
10K
R5
10K
C4
10V47
5V REG.
TR 1
2SC828Q
R6
3.3K
R7
6.8K
R8
180
C5
22000P
R9
10K
R10
10K
R11
470
C6
120P
IC3
SN7400N
1
2
A
B
C
D


R17 47
R18 10K
C11 10V47
0
E(3.8)
R22 47
R16 10K
R21 10K
(4.5)
P23
1
4
TP1
TP2
P72
1
3
R19 10K
10
0V47
R11 470
C12 22000P
C7 16V47
R8 180
R6 3300
A
L1 120μH
P71
1
2
C4 10V47
6.9
C
E
5.9
B
R7 6800
TR1 2SC828Q

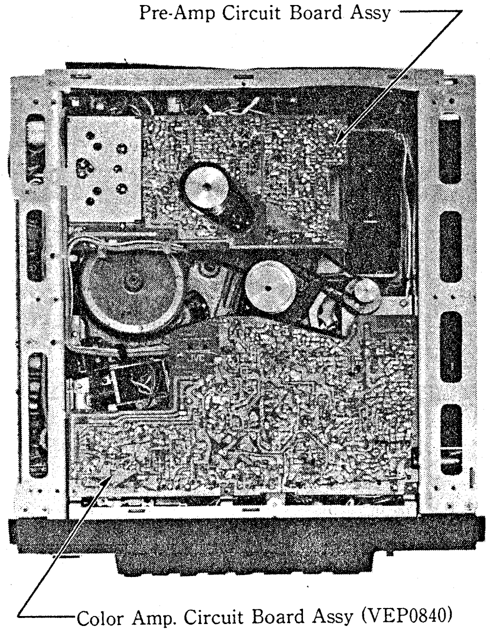

SWITCHING TR 2 2SC1317R
SWITCHING TR 3 2SC1317R
TP2 (V.D) 50Hz
TP1 (H.D) 50Hz
P72
3 V.D OUT
2 GND
1 F.R 9V
P23
4 GND
3 V.D OUT
2 GND
1 H.D OUT
P71
1 RING 9V IN
2 GND
C10 10V47
C6 120P
C7 16V4.7
IC3 SN7400N 4 NAND GATE
C8 0.039
R12 470
C13 1000P
R9 10K
R10 10K
R11 470
R13 10K
R14 1.8K
R16 1.8K
C9 16V10
R17 47
R18 10K
R19 10K
R15 2.7K
C11 10V47
R22 47
TP1
TP2
R20 2.7K
R21 10K
C12 22000P
L1 120μH
D
E
F
G

CIRCUIT BOARD LAYOUT

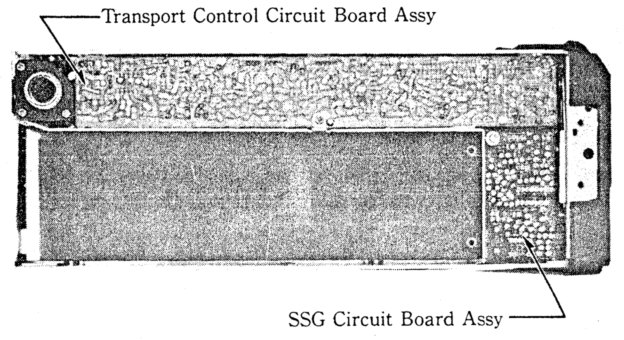
TOP VIEW


Motor Drive Circuit Board Assy
Mic Amp. Circuit Board Assy

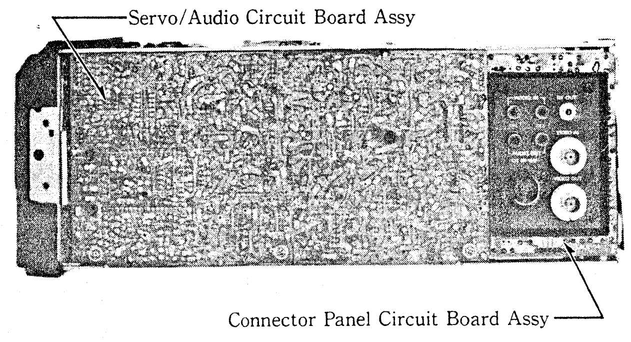
BOTTOM VIEW


Pre-Amp Circuit Board Assy
Color Amp. Circuit Board Assy (VEP0840)

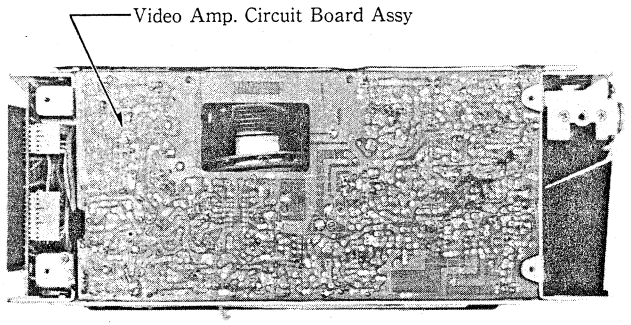
LEFT SIDE VIEW


Transport Control Circuit Board Assy
SSG Circuit Board Assy

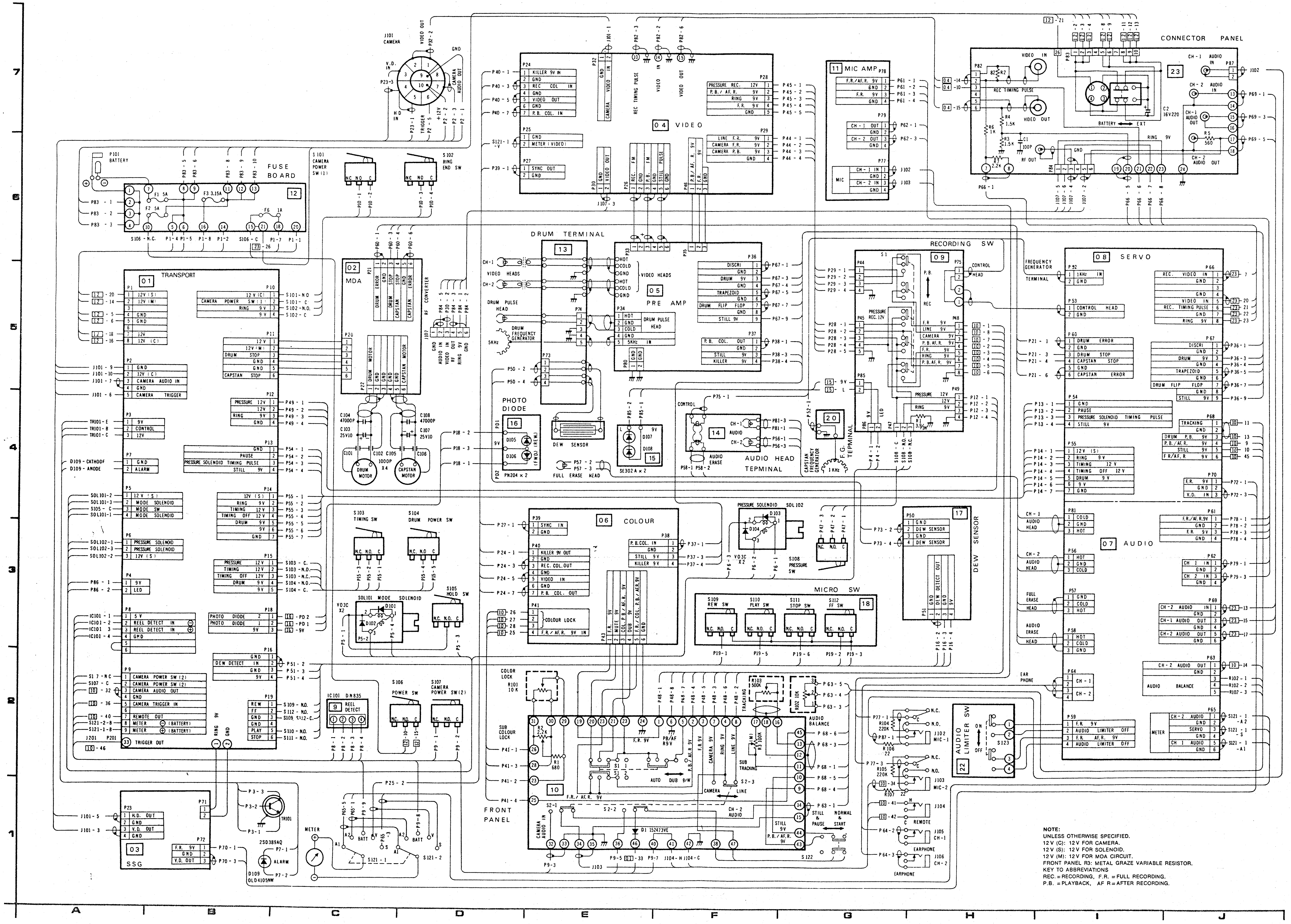
RIGHT SIDE VIEW


Servo/Audio Circuit Board Assy
Connector Panel Circuit Board Assy

REAR VIEW


Video Amp. Circuit Board Assy

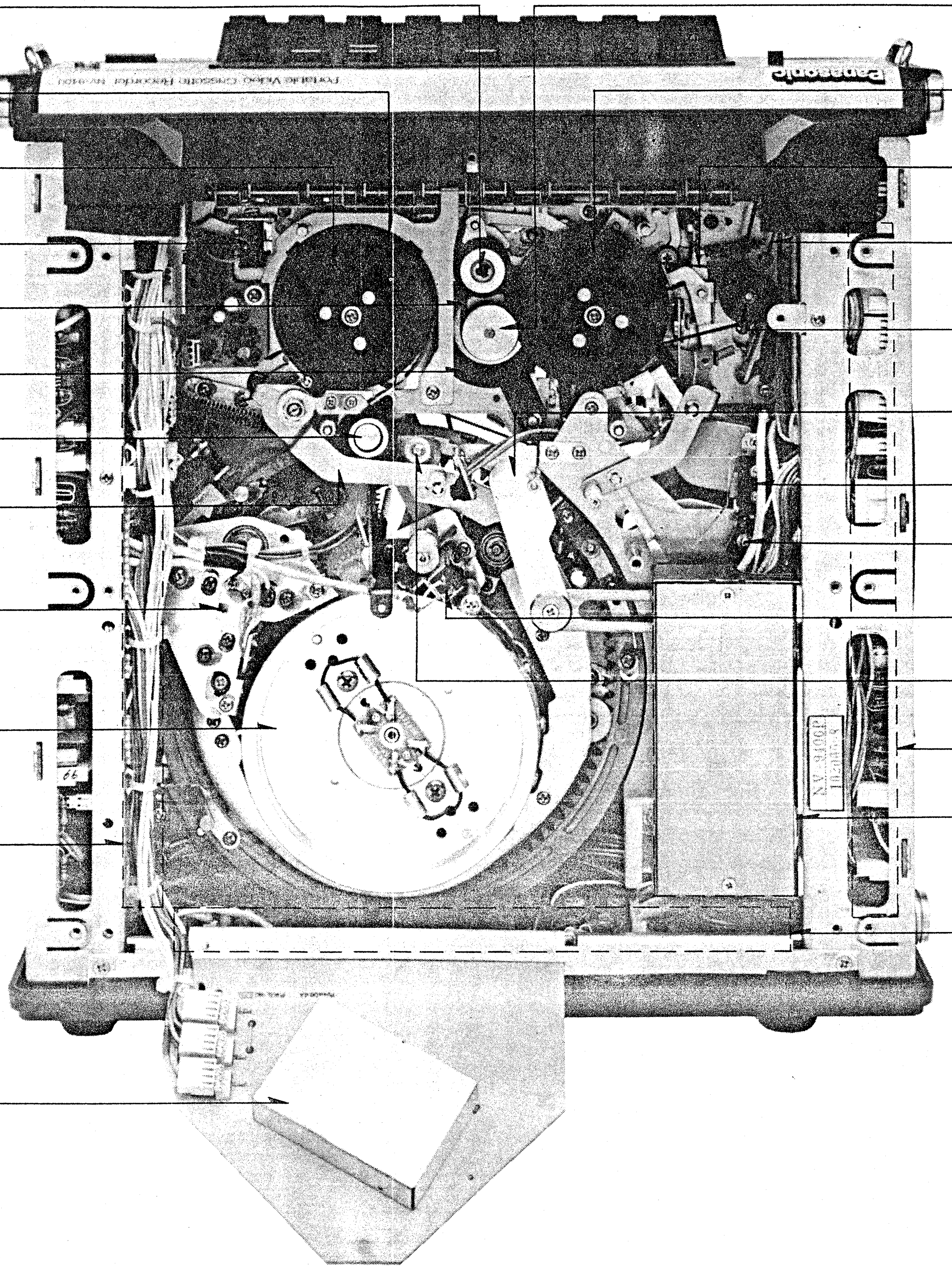
INTERCONNECTION SCHEMATIC DIAGRAM


01 TRANSPORT
02 MDA
03 SSG
04 VIDEO
05 PRE AMP
06 COLOUR
07 AUDIO
08 SERVO
09 RECORDING SW
10 FRONT PANEL
11 MIC AMP
12 FUSE BOARD
13 DRUM TERMINAL
14 AUDIO HEAD TERMINAL
16 PHOTO DIODE
17 DEW SENSOR
18 MICRO SW
20 F.G. TERMINAL
22 AUDIO LIMITER SW
23 CONNECTOR PANEL
J101 CAMERA
P101 BATTERY
S101 CAMERA POWER SW (1)
S102 RING END SW
S103 TIMING SW
S104 DRUM POWER SW
S105 HOLD SW
S106 POWER SW
S107 CAMERA POWER SW (2)
SOL101 MODE SOLENOID
DRUM MOTOR
CAPSTAN MOTOR
DEW SENSOR
FULL ERASE HEAD
METER
ALARM
EARPHONE
A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
6
7

NOTE:
UNLESS OTHERWISE SPECIFIED.
12 V (C): 12 V FOR CAMERA.
12 V (S): 12 V FOR SOLENOID.
12 V (M): 12 V FOR MOA CIRCUIT.
FRONT PANEL R3: METAL GRAZE VARIABLE RESISTOR.
KEY TO ABBREVIATIONS
REC. = RECORDING, F.R. = FULL RECORDING.
P.B. = PLAYBACK, AF R = AFTER RECORDING.

INNER PARTS LOCATION

Top View



F.F Pulley Unit VXP0207
F.F Tire VMG0176

Brake Shoe Ass'y VXZ0052

Supply Reel Table Unit VXR0068

Push Switch VSP0066

F.F Belt VDV0089

Idler Unit VXP0209

Pressure Roller Ass'y VXP0206

Tension Arm Ass'y VXL0507

Erase & R/P Head VBR0021

Drum (Cylinder) Unit VEG0112
Upper Drum (Video Head Unit) VEH0077

Audio/Servo C. Board Ass'y VEP0277

Mic Amp. C. Board Ass'y VEP0436

F.F Pulley VDP0587

Takeup Reel Table Unit VXR0069

Counter Belt VDV0090

Counter Belt (1) VDV0090

Counter Pulley VDP0590

Guide Pole VMS1260

Micro Switch (S103) VSM0029

Micro Switch (S104) VSM0031

Full Erase Head VBS0015

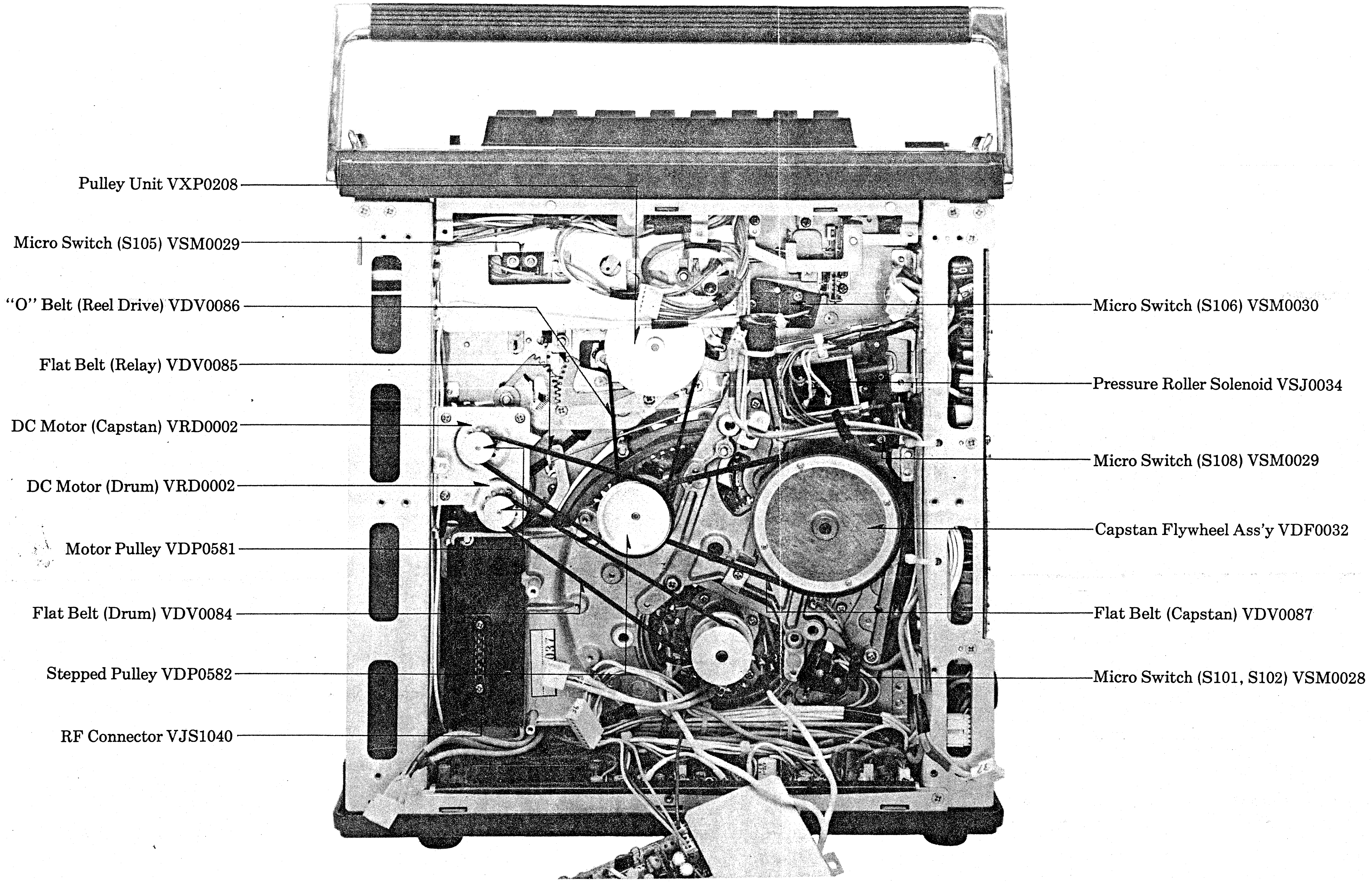
Return Roller VDP0585

Transport Control C. Board Ass'y
VEP0276

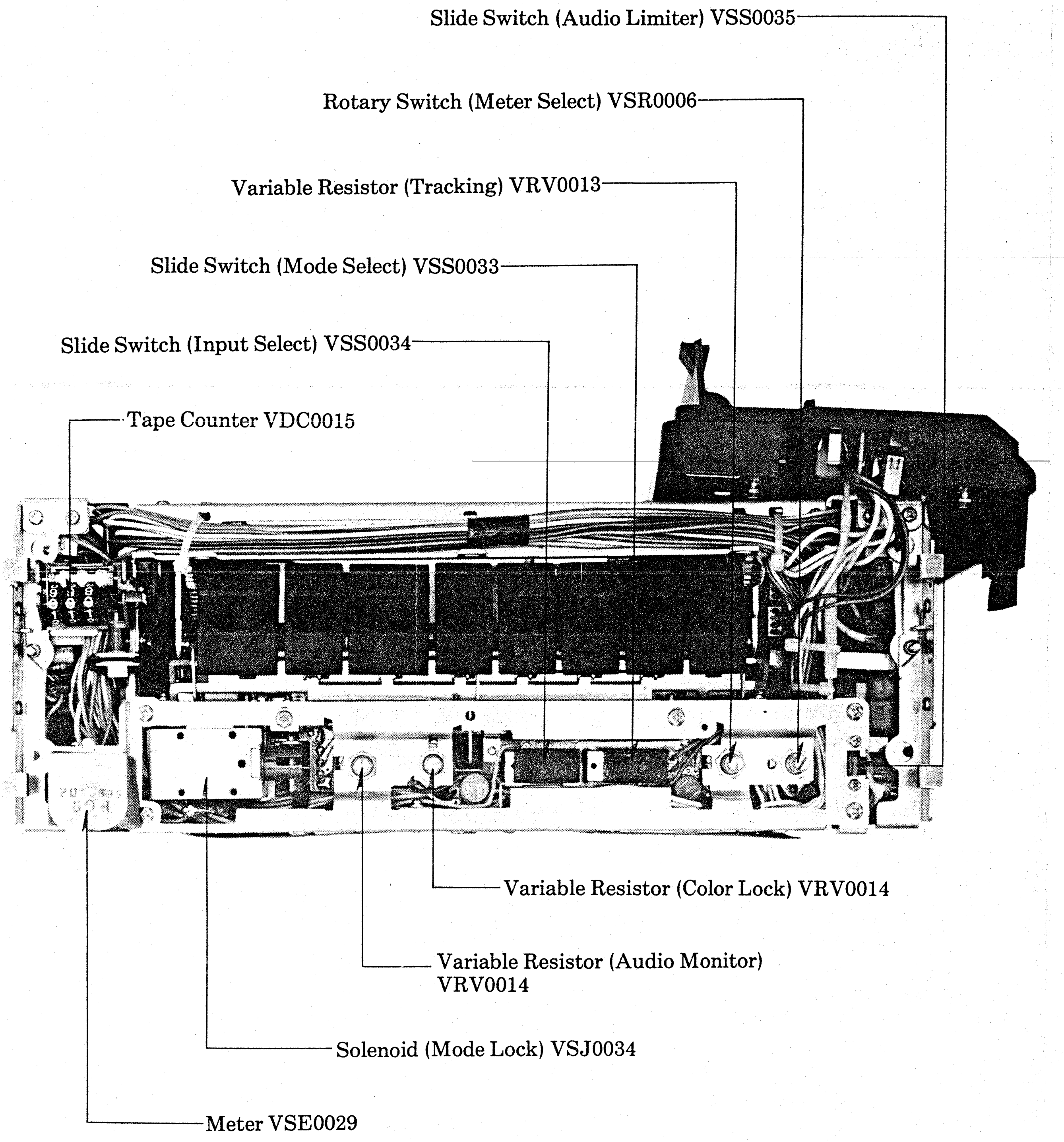
Motor Drive C. Board Ass'y VEP0278

Video C. Board Ass'y VEP0363

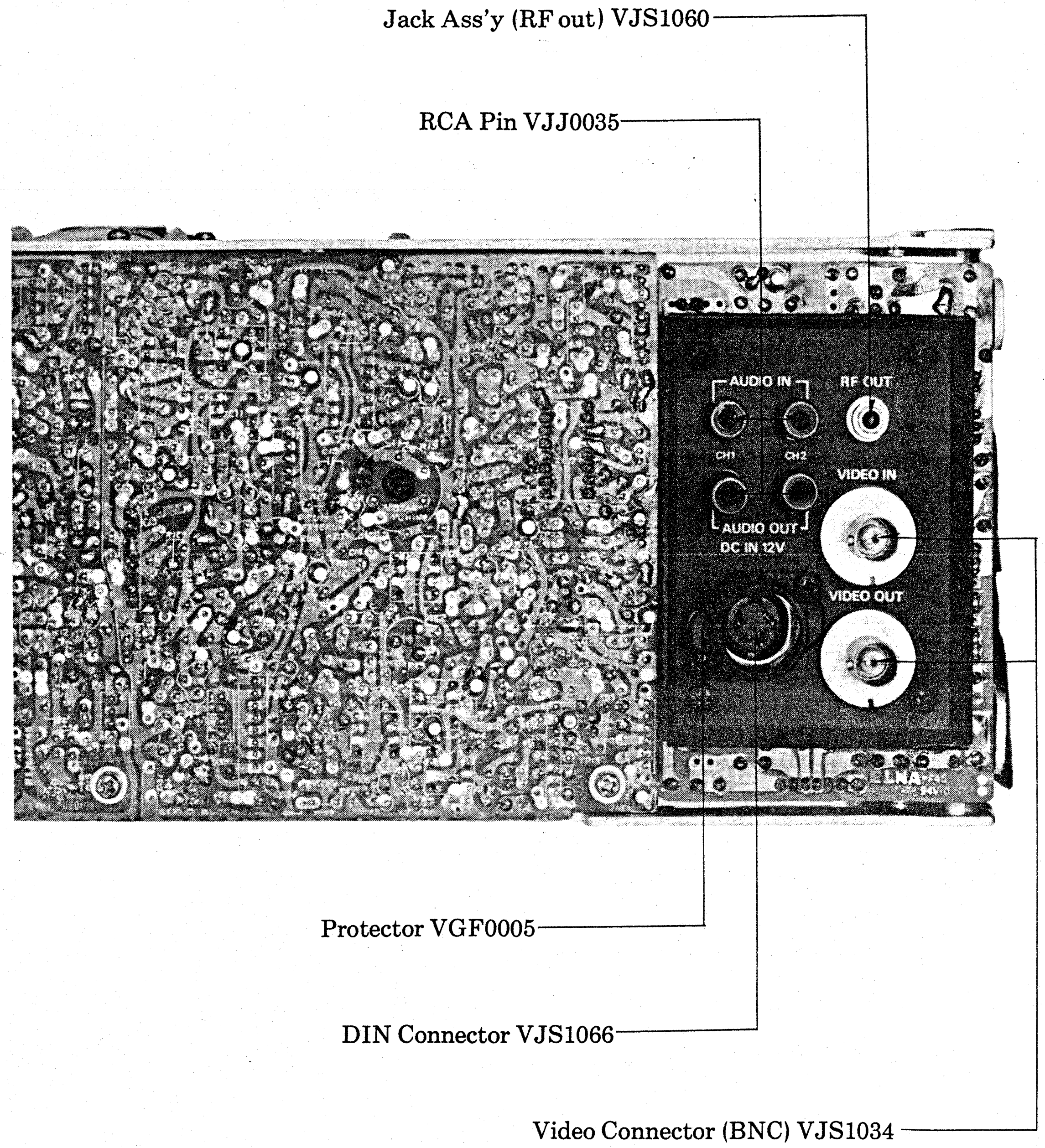
Bottom View


Pulley Unit VXP0208
Micro Switch (S105) VSM0029
"O" Belt (Reel Drive) VDV0086
Flat Belt (Relay) VDV0085
DC Motor (Capstan) VRD0002
DC Motor (Drum) VRD0002
Motor Pulley VDP0581
Flat Belt (Drum) VDV0084
Stepped Pulley VDP0582
RF Connector VJS1040
Micro Switch (S106) VSM0030
Pressure Roller Solenoid VSJ0034
Micro Switch (S108) VSM0029
Capstan Flywheel Ass'y VDF0032
Flat Belt (Capstan) VDV0087
Micro Switch (S101, S102) VSM0028

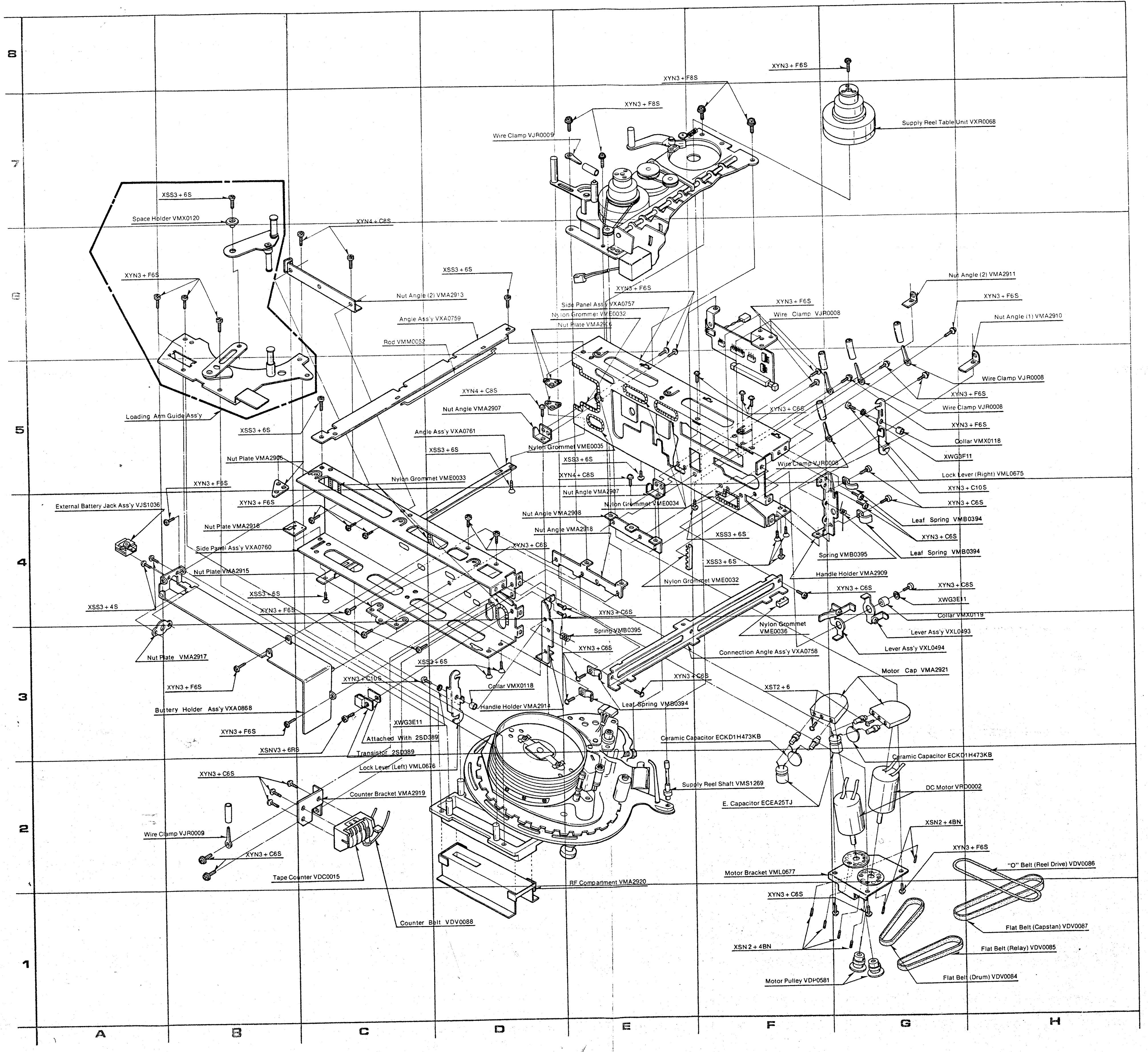
Front View


Slide Switch (Audio Limiter) VSS0035
Rotary Switch (Meter Select) VSR0006
Variable Resistor (Tracking) VRV0013
Slide Switch (Mode Select) VSS0033
Slide Switch (Input Select) VSS0034
Tape Counter VDC0015
Variable Resistor (Color Lock) VRV0014
Variable Resistor (Audio Monitor) VRV0014
Solenoid (Mode Lock) VSJ0034
Meter VSE0029

Side View


Jack Ass'y (RF out) VJS1060
RCA Pin VJJ0035
AUDIO IN
RF OUT
CH1
CH2
VIDEO IN
AUDIO OUT
DC IN 12V
VIDEO OUT
Protector VGF0005
DIN Connector VJS1066
Video Connector (BNC) VJS1034

EXPLODED VIEW ❶ *Mechanism Ass'y Section*


8
7
6
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1
XYN3 + F6S
XYN3 + F8S
XYN3 + F8S
Supply Reel Table Unit VXR0068
Wire Clamp VJR0009
XSS3 + 6S
Space Holder VMX0120
XYN4 + C8S
XYN3 + F6S
XSS3 + 6S
Nut Angle (2) VMA2913
Angle Ass'y VXA0759
Rod VMM0052
XYN3 + F6S
Side Panel Ass'y VXA0757
Nylon Grommet VME0032
Nut Plate VMA2906
XYN3 + F6S
Wire Clamp VJR0008
Nut Angle (2) VMA2911
XYN3 + F6S
Nut Angle (1) VMA2910
Wire Clamp VJR0008
XYN3 + F6S
Wire Clamp VJR0008
XYN3 + F6S
Collar VMX0118
XWG3F11
Lock Lever (Right) VML0675
XYN3 + C10S
XYN3 + C6S
Leaf Spring VMB0394
XYN3 + C6S
Leaf Spring VMB0394
Loading Arm Guide Ass'y
XYN4 + C8S
Nut Angle VMA2907
XSS3 + 6S
Angle Ass'y VXA0761
XSS3 + 6S
Nylon Grommet VME0035
Nut Plate VMA2906
XSS3 + 6S
Nylon Grommet VME0033
XYN4 + C8S
XYN3 + C6S
Wire Clamp VJR0008
Nut Angle VMA2907
Nylon Grommet VME0034
XYN3 + F6S
External Battery Jack Ass'y VJS1036
XYN3 + F6S
Nut Angle VMA2908
Nut Plate VMA2916
Nut Angle VMA2918
Side Panel Ass'y VXA0760
XYN3 + C6S
XSS3 + 6S
XSS3 + 6S
Spring VMB0395
Nut Plate VMA2915
Handle Holder VMA2909
Nylon Grommet VME0032
XYN3 + C6S
XYN3 + C8S
XSS3 + 6S
XWG3E11
XSS3 + 4S
XYN3 + F6S
XYN3 + C6S
Collar VMX0119
Spring VMB0395
Nylon Grommet
VME0036
Lever Ass'y VXL0493
XYN3 + C6S
Connection Angle Ass'y VXA0758
Lever Ass'y VXL0494
Nut Plate VMA2917
XSS3 + 6S
Motor Cap VMA2921
XYN3 + C10S
XYN3 + C6S
XYN3 + F6S
Collar VMX0118
XST2 + 6
Handle Holder VMA2914
Leaf Spring VMB0394
Buttery Holder Ass'y VXA0868
XWG3E11
XYN3 + F6S
Attached With 2SD389
Ceramic Capacitor ECKD1H473KB
XSNV3 + 6RS
Transistor 2SD389
Ceramic Capacitor ECKD1H473KB
Lock Lever (Left) VML0676
XYN3 + C6S
Supply Reel Shaft VMS1269
DC Motor VRD0002
Counter Bracket VMA2919
E. Capacitor ECEA25TJ
XSN2 + 4BN
Wire Clamp VJR0009
XYN3 + F6S
XYN3 + C6S
"O" Belt (Reel Drive) VDV0086
Motor Bracket VML0677
Tape Counter VDC0015
RF Compartment VMA2920
XYN3 + C6S
Flat Belt (Capstan) VDV0087
Counter Belt VDV0088
XSN 2 + 4BN
Flat Belt (Relay) VDV0085
Flat Belt (Drum) VDV0084
Motor Pulley VDP0581
A
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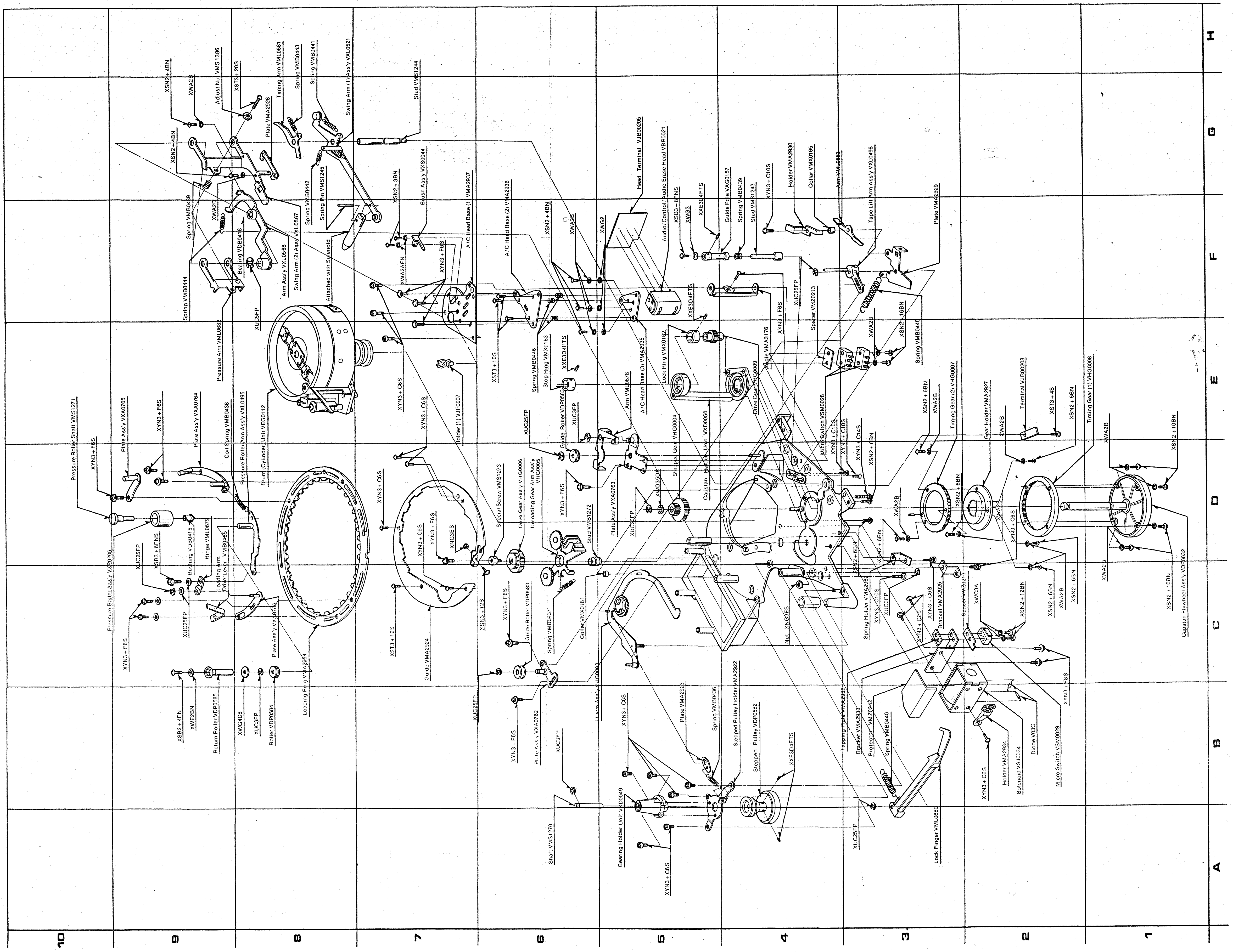
H

❷ *Main Deck Ass'y Section*


H
G
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10
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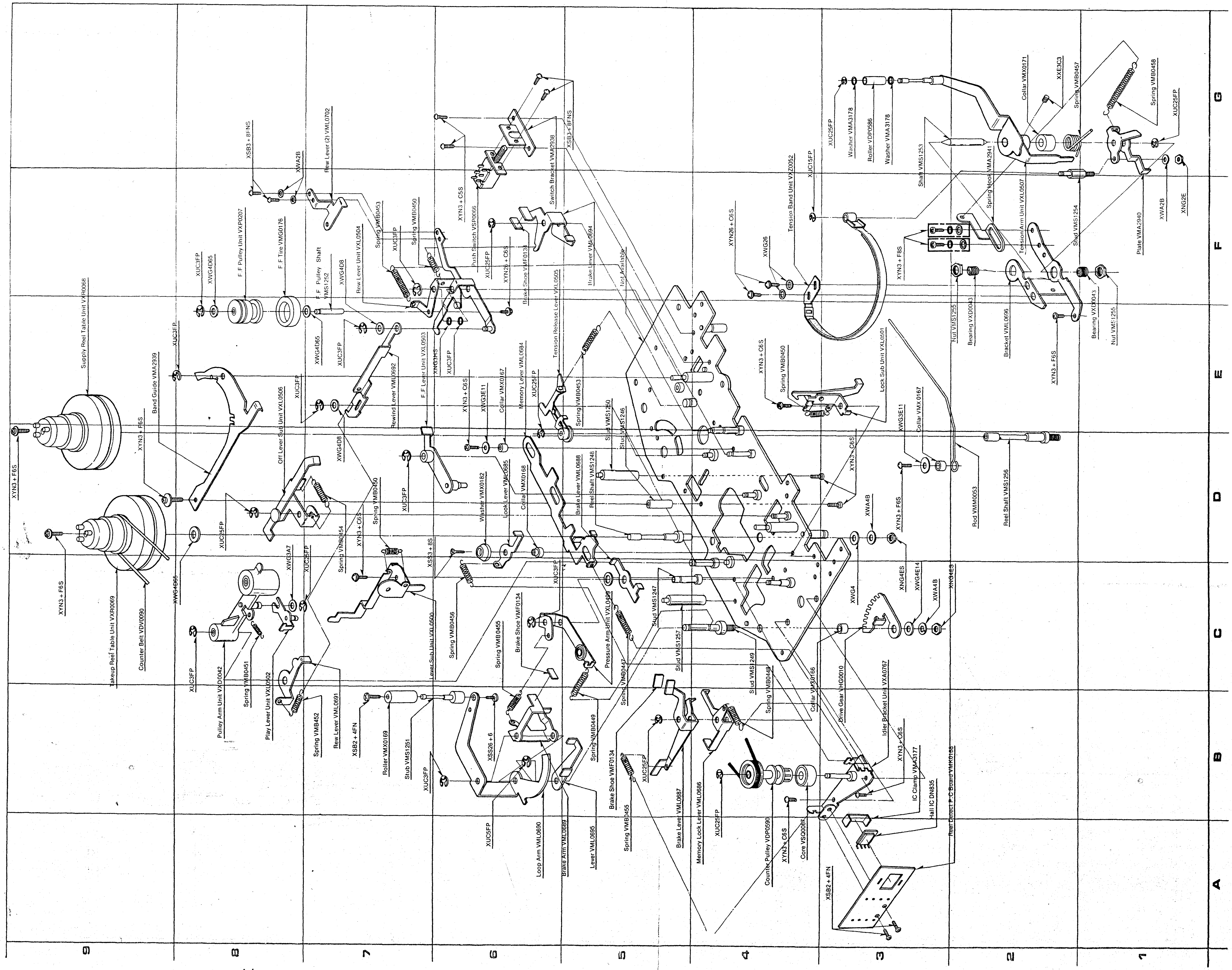
1
XSN2 + 4BN
XWA2B
Adjust Nut VMS1386
XST3 + 20S
Timing Arm VML0681
Spring VMB0443
Spring VMB0441
Swing Arm (1) Ass'y VXL0521
Plate VMA2928
Stud VMS1244
XSN2 + 4BN
Spring VMB0439
XWA2B
Bearing VDB0418
Spring VMB0444
Pressure Arm VML0682
XUC5FP
Bearing VDB0416
Arm Ass'y VXL0568
Swing Arm (2) Ass'y VXL0587
Spring VMB0442
Spring Pin VMS1245
Attached with Solenoid
XSN2 + 3BN
Bush Ass'y VXS0044
XWA2AFN
XYN3 + F6S
A/C Head Base (1) VMA2937
A/C Head Base (2) VMA2936
XSN2 + 4BN
XWA2B
XWG2
Head Terminal VJB00205
Audio/Control/Audio Erase Head VBR0021
XSB3 + 6FNS
XWG3
XXE3D4FTS
Guide Pole VAG0157
Spring VMB0439
Stud VMS1243
XYN3 + C10S
Holder VMA2930
Collar VMX0165
Arm VML0683
Tape Lift Arm Ass'y VXL0498
Plate VMA2929
XXE3D4FTS
XYN3 + F6S
XUC25FP
Spacer VMZ0213
XWA2B
XSN2 + 16BN
Spring VMB0445
Angle VMA3176
Lock Ring VMX0162
A/C Head Base (3) VMA2935
Arm VML0678
Stop Ring VMX0163
XXE3D4FTS
Spring VMB0446
XST3 + 10S
Holder (1) VJF0007
Drum (Cylinder) Unit VEG0112
Coil Spring VMB0438
Pressure Roller Arm Ass'y VXL0495
Plate Ass'y VXA0764
XYN3 + F6S
Plate Ass'y VXA0765
XYN3 + F6S
Pressure Roller Shaft VMS1271
XYN3 + C6S
XYN3 + C6S
XUC25FP
Guide Roller VDP0582
XUC3FP
Drive Gear VHG0009
Micro Switch VSM0028
XYN3 + C10S
XYN3 + C14S
XSN2 + 6BN
Stepped Gear VHG0004
Capstan Holder Unit VXD0050
XSN2 + 6BN
XWA2B
Timing Gear (2) VHG0007
Gear Holder VMA2927
XWA2B
Terminal VJB00208
XST3 + 4S
XSN2 + 6BN
Timing Gear (1) VHG0008
XWA2B
XSN2 + 10BN
Special Screw VMS1273
Drive Gear Ass'y VHG0006
Unloading Gear Arm Ass'y VHG0005
XYN3 + F6S
Stud VMS1272
Plate Ass'y VXA0763
XUC25FP
XWG3
XYN3 + C6S
XYN3 + C6S
XNG3ES
Guide VMA2924
XST3 + 12S
XSN3 + 12S
XYN3 + F6S
Guide Roller VDP0583
Spring VMB0437
Collar VMX0161
Pressure Roller Ass'y VXP0206
XUC25FP
XSB3 + 6FNS
Bushing VDB0415
Hinge VML0679
Loading Arm Drive Lever VMB0665
XUC25FP
XYN3 + F6S
Plate Ass'y VXA0766
Loading Ring VMA2964
XSB2 + 4FN
XWE2BN
Return Roller VDP0585
XWG4DB
XUC3FP
Roller VDP0584
XUC25FP
XYN3 + F6S
Plate Ass'y VXA0762
XUC3FP
Drum Ass'y VXQ0061
XYN3 + C6S
Plate VMA2923
Spring VMB0436
Stepped Pulley Holder VMA2922
Stepped Pulley VDP0582
XXE3D4FTS
Shaft VMS1270
Bearing Holder Unit VXD0049
XYN3 + C6S
Nut XNG3ES
Spring Holder VMA2925
XYN3 + C10S
XUC3FP
XYN3 + C6S
Bracket VMA2926
Spacer VMZ0212
XWC3A
XYN3 + C6S
XSN2 + 12BN
XSN2 + 6BN
XWA2B
XSN2 + 6BN
XWA2B
XSN2 + 10BN
Capstan Flywheel Ass'y VDF0032
Tapping Plate VMA2932
Bracket VMA2933
Protector VMZ0242
Spring VMB0440
XUC25FP
Lock Finger VML0680
XYN3 + C6S
Holder VMA2934
Solenoid VSJ0034
Diode V03C
Micro Switch VSM0029
XYN3 + F8S

❸ *Sub-chassis Ass'y Section-1*


G
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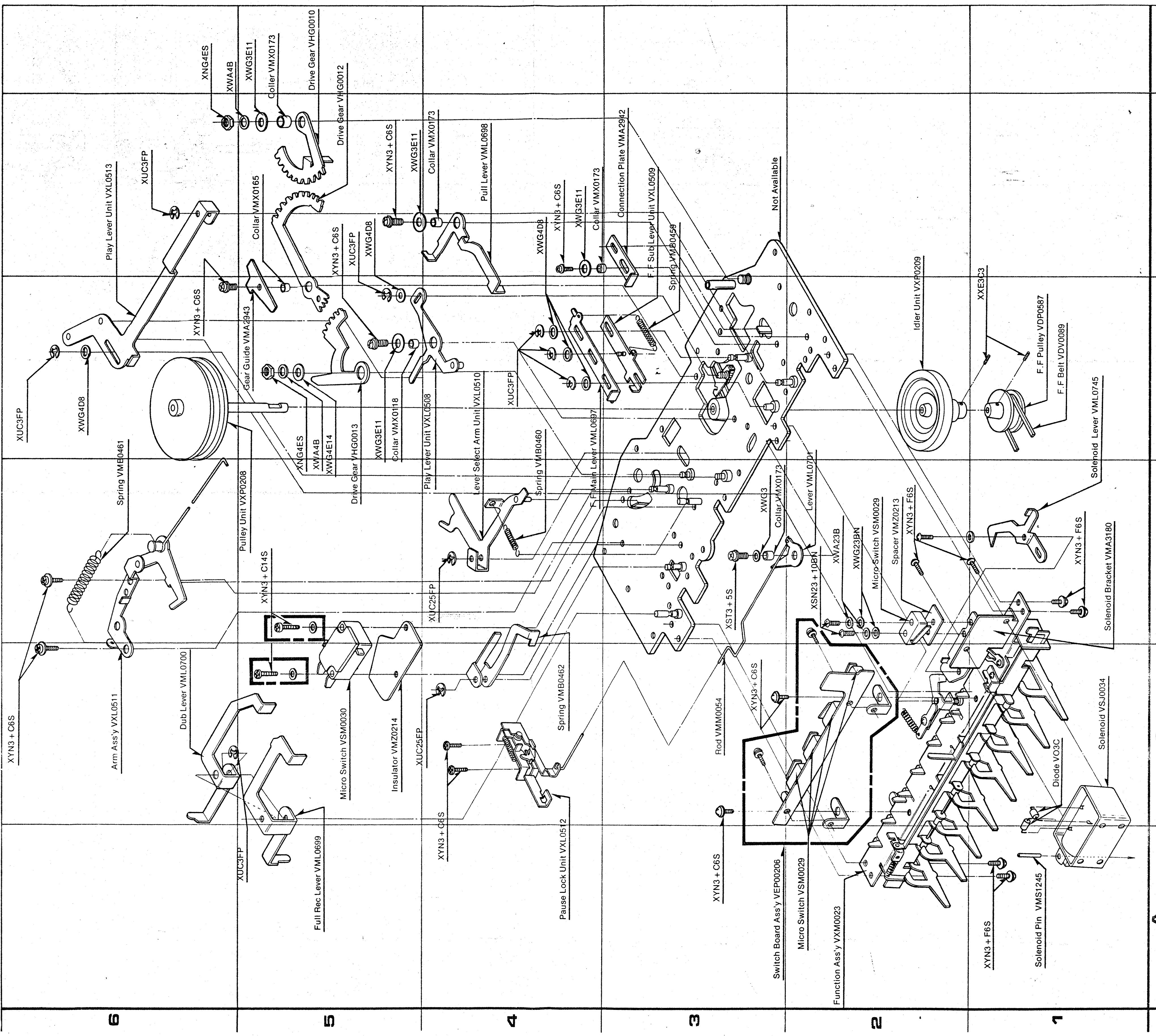
Supply Reel Table Unit VXR0068
XYN3 + F6S
XYN3 + F6S
XYN3 + F6S
Band Guide VMA2939
XUC3FP
Takeup Reel Table Unit VXR0069
Counter Belt VDV0090
XWG4065
XUC25FP
XUC3FP
XUC3FP
XWG4065
F.F Pulley Unit VXP0207
F.F Tire VMG0176
XSB3 + 8FNS
XWA2B
Rew Lever (2) VML0702
F.F Pulley Shaft VMS1252
XWG408
Rew Lever Unit VXL0504
XUC3FP
Off Lever Sub Unit VXL0506
XUC3FP
XWG4065
XWG408
Rewind Lever VML0692
XWG3A7
XUC25FP
Pulley Arm Unit VXD0042
Spring VMB0451
Play Lever Unit VXL0502
Spring VMB452
Rew Lever VML0691
XSB2 + 4FN
Roller VMX0169
Stub VMS1251
XUC2FP
Spring VMB0450
Spring VMB0454
XYN3 + C6S
Spring VMB0453
XUC3FP
Spring VMB0450
XUC3FP
F.F Lever Unit VXL0503
XNG3HS
XUC3FP
Lever Sub Unit VXL0500
XSS3 + 8S
Spring VMB0456
XYN3 + C5S
Push Switch VSP0056
XUC25FP
Brake Shoe VMF0134
XYN3 + C6S
XYN3 + C6S
XWG3E11
Collar VMX0167
Memory Lever VML0684
Washer VMX0182
Lock Lever VML0685
Collar VMX0168
Spring VMB0455
Brake Shoe VMF0134
XSS26 + 6
XUC5FP
Loop Arm VML0690
Brake Arm VML0689
Lever VML0695
Switch Bracket VMA2938
XSB3 + 8FNS
Brake Lever VML0694
Not Available
Tension Release Lever VXL0505
XUC25FP
Spring VMB0453
Slud VMS1250
Stud VMS1246
Brake Lever VML0688
Reel Shaft VMS1248
XUC3FP
Pressure Arm Unit VXL0497
Stud VMS1247
Slud VMS1257
Spring VMB0447
Spring VMB0449
Brake Shoe VMF0134
Spring VMB0455
XUC25FP
Brake Lever VML0687
Memory Lock Lever VML0686
XUC25FP
Counter Pulley VDP0590
XYN3 + C6S
Core VSQ0067
Slud VMS1249
Spring VMB0448
Collar VMX0165
Drive Gear VHG0010
XYN26 + C6S
XWG26
Tension Band Unit VXZ0052
XUC15FP
XYN3 + C6S
Spring VMB0450
Lock Sub Unit VXL0501
XYN3 + C6S
XWA4B
XYN3 + F6S
XWG4
XNG4ES
XWG4E14
XWA4B
XNG4E3
Idler Bracket Unit VXA0767
XYN3 + C6S
IC Clamp VMA3177
Hall IC DN835
Reel Detect P.C Board VMK0185
XSB2 + 4FN
XUC25FP
Washer VMA3178
Roller VDP0586
Washer VMA3178
Shaft VMS1253
XYN3 + F8S
Collar VMX0171
XXE3C3
Spring VMB0457
Spring Hook VMA2941
Tension Arm Unit VXL0507
Stud VMS1254
Spring VMB0458
XUC25FP
Plate VMA2940
XWA2B
XNG2E
Nut VMS1255
Bearing VXD0043
Bracket VML0696
Bearing VXD0043
Nut VMS1255
XYN3 + F6S
XWG3E11
Collar VMX 0167
Rod VMM0053
Reel Shaft VMS1256

④ *Sub-chassis Ass'y Section-2 (Bottom View)*


XNG4ES
XWA4B
XWG3E11
Coller VMX0173
Drive Gear VHG0010
Drive Gear VHG0012
XYN3 + C6S
XWG3E11
Collar VMX0173
Pull Lever VML0698
Connection Plate VMA2942
XYN3 + C6S
XWG3E11
Collar VMX0173
F.F Sub Lever Unit VXL0509
Spring VMB0458
XWG4D8
Not Available
Play Lever Unit VXL0513
XUC3FP
Collar VMX0165
XYN3 + C6S
XUC3FP
XWG4D8
XYN3 + C6S
Gear Guide VMA2943
Idler Unit VXP0209
XXE3C3
F.F Pulley VDP0587
F.F Belt VDV0089
XUC3FP
XWG4D8
XNG4ES
XWA4B
XWG4E14
Drive Gear VHG0013
XWG3E11
Collar VMX0118
Play Lever Unit VXL0508
Lever Select Arm Unit VXL0510
XUC3FP
Spring VMB0460
F.F Main Lever VML0697
Lever VML0701
Collar VMX0173
XWG3
Solenoid Lever VML0745
Spring VME0461
Pulley Unit VXP0208
XYN3 + C14S
XUC25FP
XST3 + 5S
XSN23 + 10BN
XWA23B
XWG23BN
Micro Switch VSM0029
Spacer VMZ0213
XYN3 + F6S
XYN3 + F6S
Solenoid Bracket VMA3180
XYN3 + C6S
Arm Ass'y VXL0511
Dub Lever VML0700
Micro Switch VSM0030
Insulator VMZ0214
XUC25FP
Spring VMB0462
Rod VMM0054
XYN3 + C6S
Solenoid VSJ0034
Diode VO3C
XUC3FP
Full Rec Lever VML0699
XYN3 + C6S
Pause Lock Unit VXL0512
XYN3 + C6S
Switch Board Ass'y VEP00206
Micro Switch VSM0029
Function Ass'y VXM0023
XYN3 + F6S
Solenoid Pin VMS1245
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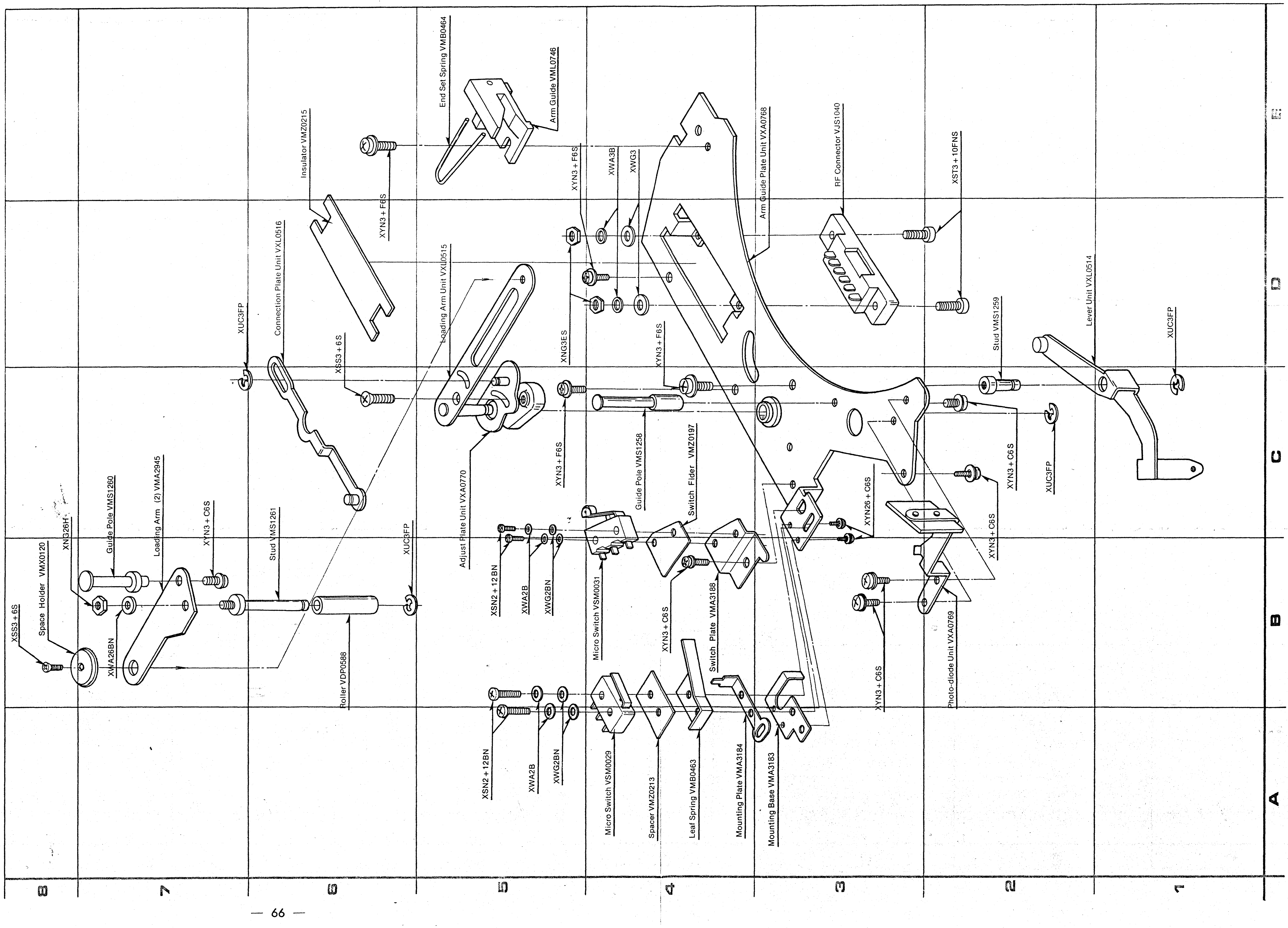
⑤ *Loading Arm Ass'y Section*


End Set Spring VMB0464
Arm Guide VML0746
XYN3+F6S
Insulator VMZ0215
XYN3+F6S
XWA3B
XWG3
Arm Guide Plate Unit VXA0768
RF Connector VJS1040
XST3+10FNS
Connection Plate Unit VXL0516
Loading Arm Unit VXL0515
XUC3FP
XSS3+6S
XNG3ES
XYN3+F6S
Lever Unit VXL0514
Stud VMS1259
XUC3FP
XYN3+F6S
Guide Pole VMS1258
Switch Fider VMZ0197
Adjust Plate Unit VXA0770
XYN3+C6S
XUC3FP
XYN26+C6S
XYN3+C6S
XNG26H
Guide Pole VMS1260
Loading Arm (2) VMA2945
XYN3+C6S
Stud VMS1261
XUC3FP
Space Holder VMX0120
XSS3+6S
XWA26BN
Roller VDP0588
XSN2+12BN
XWA2B
XWG2BN
Micro Switch VSM0031
XYN3+C6S
Switch Plate VMA3188
Photo-diode Unit VXA0769
XYN3+C6S
XSN2+12BN
XWA2B
XWG2BN
Micro Switch VSM0029
Spacer VMZ0213
Leaf Spring VMB0463
Mounting Plate VMA3184
Mounting Base VMA3183
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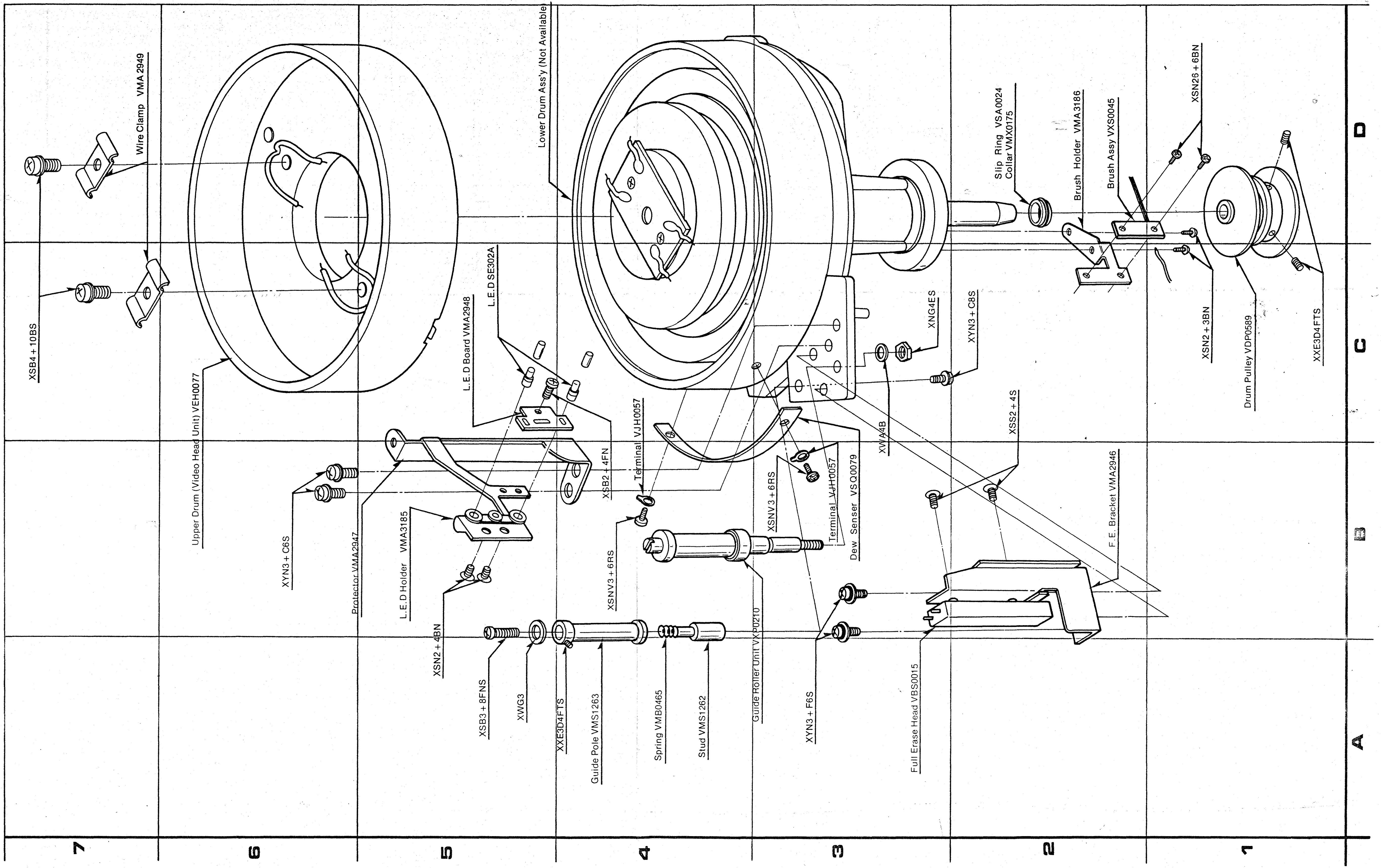
❻ *Drum System Ass'y Section VEG0112*


Wire Clamp VMA 2949
XSB4+10BS
Upper Drum (Video Head Unit) VEH0077
Lower Drum Ass'y (Not Available)
L.E.D SE302A
L.E.D Board VMA2948
XSB2+4FN
Protector VMA2947
XYN3+C6S
L.E.D Holder VMA3185
XSN2+4BN
XSNV3+6RS
Terminal VJH0057
XSB3+8FNS
XWG3
XXE3D4FTS
Guide Pole VMS1263
Spring VMB0465
Stud VMS1262
Guide Roller Unit VXP0210
XYN3+F6S
XSNV3+6RS
Terminal VJH0057
Dew Senser VSQ0079
XWA4B
XNG4ES
XYN3+C8S
XSS2+4S
F. E. Bracket VMA2946
Full Erase Head VBS0015
Slip Ring VSA0024
Collar VMX0175
Brush Holder VMA3186
Brush Assy VXS0045
XSN26+6BN
XSN2+3BN
Drum Pulley VDP0589
XXE3D4FTS
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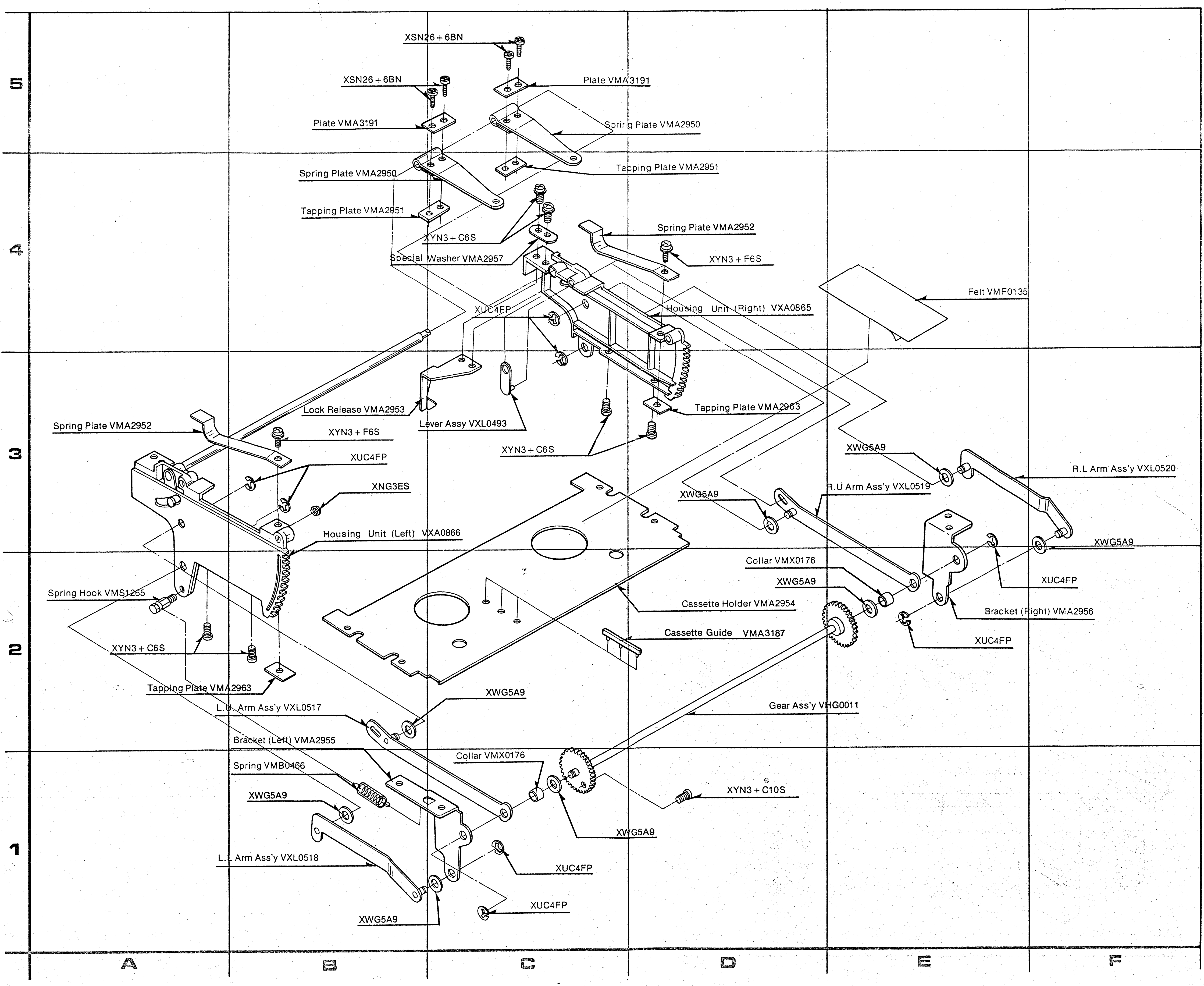
❼ *Cassette Housing Ass'y Section VYF0106*


XSN26 + 6BN
XSN26 + 6BN
Plate VMA3191
Plate VMA3191
Spring Plate VMA2950
Spring Plate VMA2950
Tapping Plate VMA2951
Tapping Plate VMA2951
XYN3 + C6S
Special Washer VMA2957
Spring Plate VMA2952
XYN3 + F6S
Felt VMF0135
XUC4FP
Housing Unit (Right) VXA0865
Lock Release VMA2953
Lever Assy VXL0493
Tapping Plate VMA2963
Spring Plate VMA2952
XYN3 + F6S
XUC4FP
XYN3 + C6S
XWG5A9
R.L Arm Ass'y VXL0520
XNG3ES
R.U Arm Ass'y VXL0519
XWG5A9
Housing Unit (Left) VXA0866
XWG5A9
Collar VMX0176
XUC4FP
XWG5A9
Spring Hook VMS1265
Cassette Holder VMA2954
Bracket (Right) VMA2956
Cassette Guide VMA3187
XYN3 + C6S
XUC4FP
Tapping Plate VMA2963
XWG5A9
L.U. Arm Ass'y VXL0517
Gear Ass'y VHG0011
Bracket (Left) VMA2955
Collar VMX0176
Spring VMB0466
XYN3 + C10S
XWG5A9
XWG5A9
L.L Arm Ass'y VXL0518
XUC4FP
XUC4FP
XWG5A9
5
4
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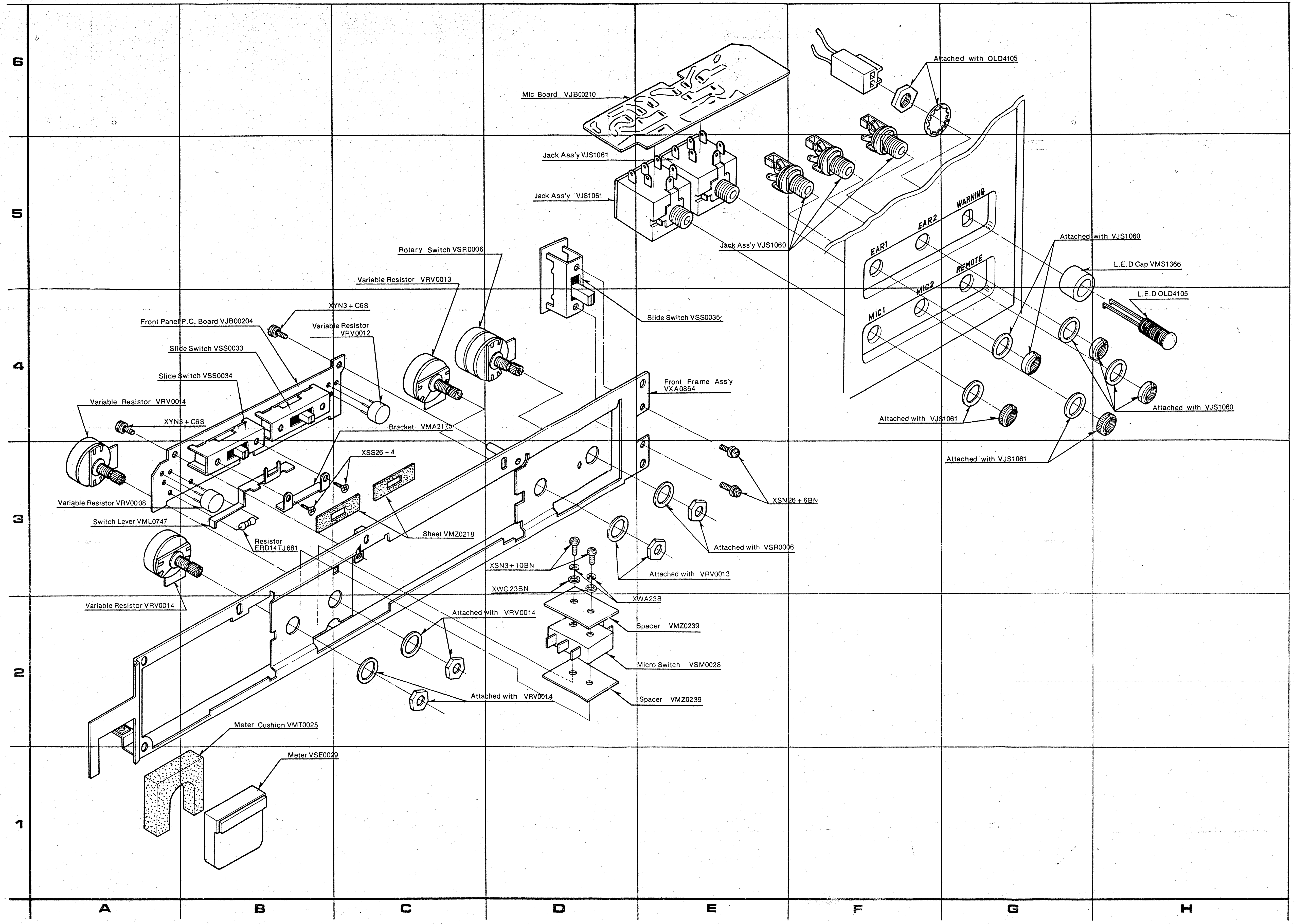
F

⑧ *Front Control Panel Section*


6
5
4
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A
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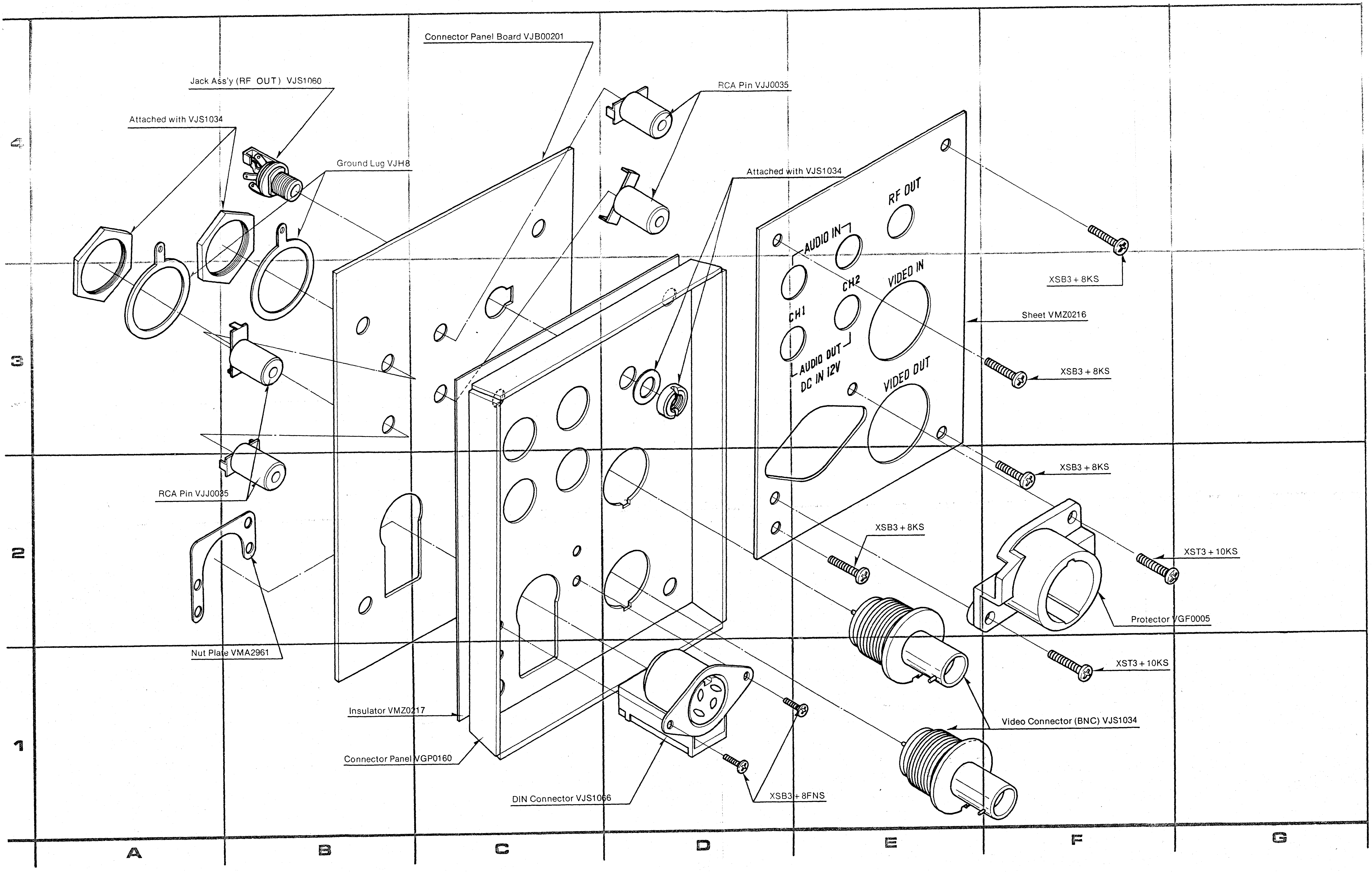
C
D
E
F
G
H
Mic Board VJB00210
Jack Ass'y VJS1061
Jack Ass'y VJS1061
Jack Ass'y VJS1060
Attached with OLD4105
WARNING
EAR2
EAR1
REMOTE
MIC2
MIC1
Attached with VJS1060
L.E.D Cap VMS1366
L.E.D OLD4105
Attached with VJS1060
Attached with VJS1061
Attached with VJS1061
Rotary Switch VSR0006
Variable Resistor VRV0013
XYN3 + C6S
Variable Resistor VRV0012
Front Panel P.C. Board VJB00204
Slide Switch VSS0033
Slide Switch VSS0034
Variable Resistor VRV0014
XYN3 + C6S
Bracket VMA3175
XSS26 + 4
Variable Resistor VRV0008
Switch Lever VML0747
Resistor ERD14TJ681
Sheet VMZ0218
Variable Resistor VRV0014
Slide Switch VSS0035
Front Frame Ass'y VXA0864
XSN26 + 6BN
Attached with VSR0006
Attached with VRV0013
XSN3+10BN
XWG23BN
XWA23B
Spacer VMZ0239
Micro Switch VSM0028
Spacer VMZ0239
Attached with VRV0014
Attached with VRV0014
Meter Cushion VMT0025
Meter VSE0029

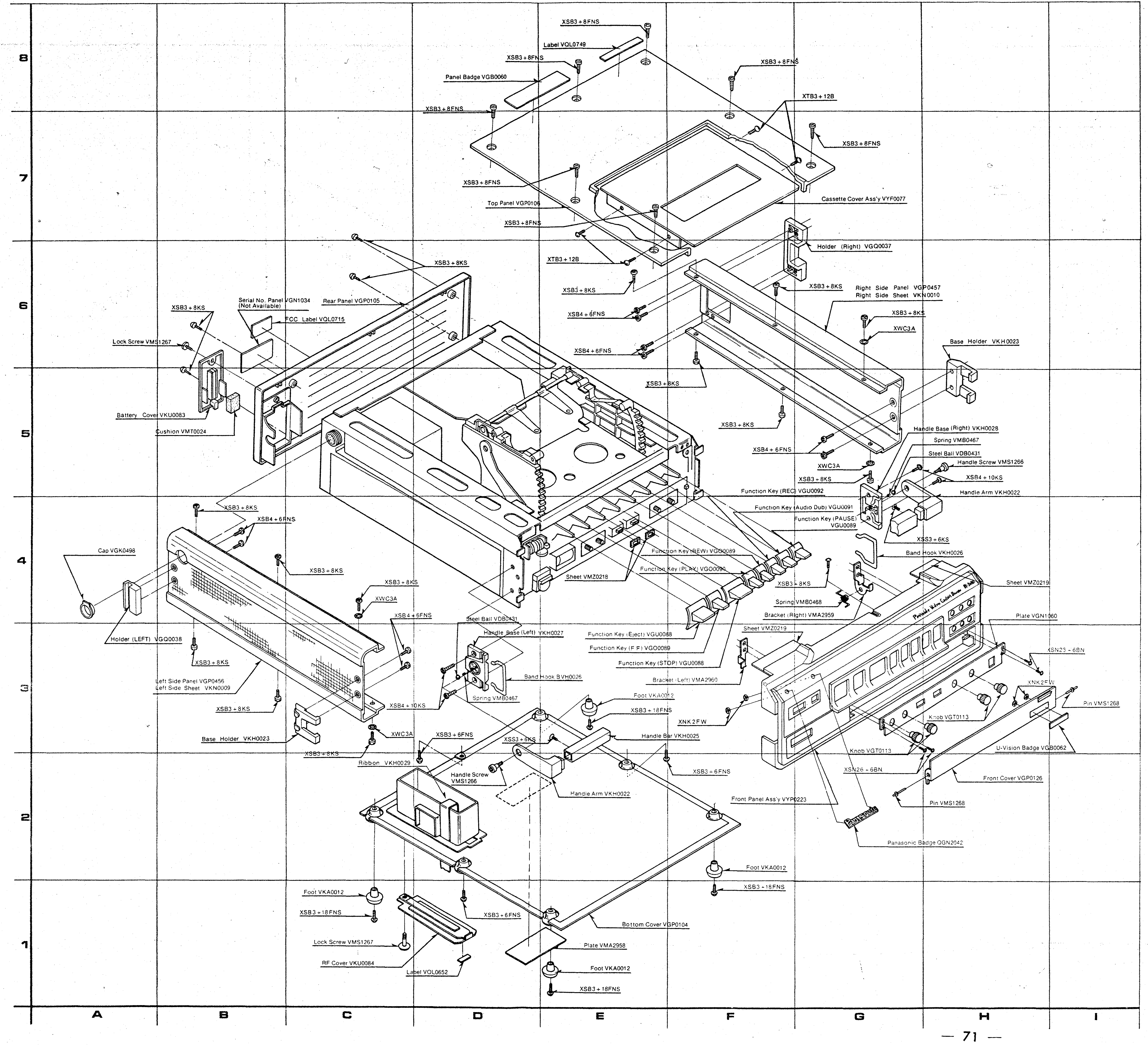
]

⑨ *Connector Board Section (Right Side)*



Connector Panel Board VJB00201
Jack Ass'y (RF OUT) VJS1060
RCA Pin VJJ0035
Attached with VJS1034
Ground Lug VJH8
Attached with VJS1034
RF OUT
AUDIO IN
CH2
VIDEO IN
CH1
AUDIO OUT
DC IN 12V
VIDEO OUT
XSB3 + 8KS
Sheet VMZ0216
XSB3 + 8KS
XSB3 + 8KS
RCA Pin VJJ0035
XSB3 + 8KS
XST3 + 10KS
Protector VGF0005
Nut Plate VMA2961
XST3 + 10KS
Insulator VMZ0217
Video Connector (BNC) VJS1034
Connector Panel VGP0160
DIN Connector VJS1066
XSB3 + 8FNS
4
3
2
1
A
B
C
D
E
F
G

⑩ Casing Section


XSB3+8FNS
Label VQL0749
XSB3+8FNS
Panel Badge VGB0060
XSB3+8FNS
XSB3+8FNS
XTB3+12B
XSB3+8FNS
XSB3+8FNS
Top Panel VGP0106
XSB3+8FNS
Cassette Cover Ass'y VYF0077
Holder (Right) VGQ0037
XTB3+12B
XSB3+8KS
XSB3+8KS
XSB3+8KS
Right Side Panel VGP0457
Right Side Sheet VKN0010
Serial No. Panel VGN1034
(Not Available)
Rear Panel VGP0105
FCC Label VQL0715
XSB3+8KS
Lock Screw VMS1267
XSB4+6FNS
XSB4+6FNS
XSB3+8KS
XWC3A
Base Holder VKH0023
XSB3+8KS
Battery Cover VKU0083
Cushion VMT0024
XSB3+8KS
Handle Base (Right) VKH0028
XSB4+6FNS
Spring VMB0467
Steel Ball VDB0431
Handle Screw VMS1266
XWC3A
XSB3+8KS
XSB4+10KS
Function Key (REC) VGU0092
Handle Arm VKH0022
XSB3+8KS
XSB4+6FNS
Function Key (Audio Dub) VGU0091
Function Key (PAUSE)
VGU0089
XSS3+6KS
Cap VGK0498
XSB3+8KS
Function Key (REW) VGO0089
Band Hook VKH0026
Function Key (PLAY) VGO0090
Sheet VMZ0218
XSB3+8KS
Sheet VMZ0219
XSB3+8KS
XWC3A
Spring VMB0468
XSB4+6FNS
Steel Ball VDB0431
Bracket (Right) VMA2959
Plate VGN1060
Handle Base (Left) VKH0027
Function Key (Eject) VGU0088
Sheet VMZ0219
Holder (LEFT) VGQ0038
Function Key (F F) VGO0089
XSN26-6BN
XSB3+8KS
Function Key (STOP) VGU0088
Left Side Panel VGP0456
Left Side Sheet VKN0009
Band Hook BVH0026
Bracket (Left) VMA2960
XNK2FW
Foot VKA0012
Pin VMS1268
XSB3+8KS
XSB4+10KS
Spring VMB0467
XSB3+18FNS
Knob VGT0113
XNK2FW
XWC3A
XSB3+6FNS
Handle Bar VKH0025
Base Holder VKH0023
XSS3+6KS
Knob VGT0113
U-Vision Badge VGB0062
XSB3+8KS
Ribbon VKH0029
XSB3+6FNS
XSN26-6BN
Handle Screw
VMS1266
Front Cover VGP0126
Handle Arm VKH0022
Front Panel Ass'y VYP0223
Pin VMS1268
Panasonic Badge QGN2042
Foot VKA0012
Foot VKA0012
XSB3+18FNS
XSB3+18FNS
XSB3+6FNS
Bottom Cover VGP0104
Lock Screw VMS1267
Plate VMA2958
RF Cover VKU0084
Foot VKA0012
Label VQL0652
XSB3+18FNS
8
7
6
5
4
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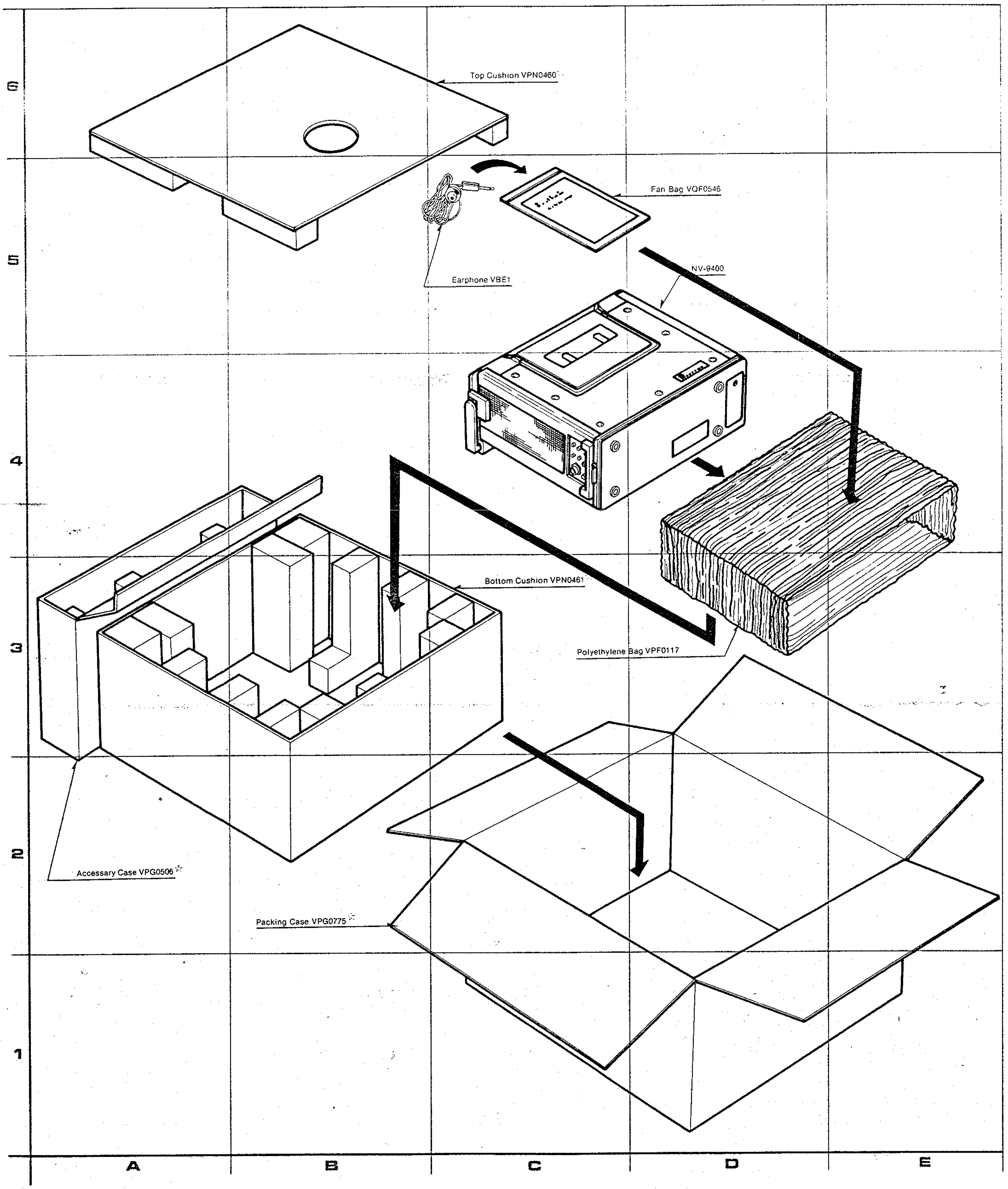
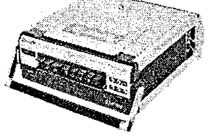
2
1
A
B
C
D
E
F
G
H
I

⑪ Packaging


6
5
4
3
2
1
A
B
C
D
E
Top Cushion VPN0460
Fan Bag VQF0546
Earphone VBE1
NV-9400
Bottom Cushion VPN0461
Polyethylene Bag VPF0117
Accessary Case VPG0506
Packing Case VPG0775

MECHANICAL REPLACEMENT PARTS LIST

Model No. NV-9400E



Notes:
1. ∗ Be sure to make your orders of replacement parts according to this list.
   ∗ "Ⓝ" in Remarks column indicates new parts.
2. The column of Ref. No. indicates the number of exploded view and the located position of the part. Refer to exploded views of No. 1—11 and see the cross section of the horizontal column (1—up) and the vertical column (A—up).

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
1(3-C)		2SD389	Transistor	1	
11		NV-9400E	Packing Case Set	1	
3(3-A)		DN835	Hall I.C	1	
1(2-F,3-G)		ECEA25TJ10L	Capacitor	2	
1(2-F,3-G)		ECKD1H473KB	Ceramic Capacitor	2	
8(3-B)		ERD14TJ681	Resistor	2	
8(4-H)		OLD4105	L.E.D.	1	
10(2-G)		QGN2042	Panasonic Badge	1	
6(4,5-C)		SE302A	L.E.D.	2	
2(2-B),		V03C	Diode	4	
4(1-B)					
2(5-F),		VAG0157	Guide Pole	1	
6(4-A)					
11(5-E)		VBE1	Earphone	1	
2(5-F)		VBR0021	Erase & R/P Head	1	
6(2-B)		VBS0015	Full Erase Head	1	
2(9-D)		VDB0415	Bushing	1	
10(3-D,5-G)		VDB0431	Steel Ball	2	
1(2-C)		VDC0015	Tape Counter	1	
2(1-D)		VDF0032	Capstan Flywheel	1	
1(1-G)		VDP0581	Motor Pulley	2	
2(4-B)		VDP0582	Stepped Pulley	1	
2(6-C,D)		VDP0583	Guide Roller	2	
2(8-C)		VDP0584	Roller	1	
2(9-C)		VDP0585	Return Roller	1	
3(3-G)		VDP0586	Roller	1	
4(1-D)		VDP0587	F.F Pulley	1	
5(6-B)		VDP0588	Roller	1	
6(1-D)		VDP0589	Drum Pulley	1	
3(4-B)		VDP0590	Counter Pulley	1	
1(1-G)		VDV0084	Flat Belt (Drum)	1	
1(1-G)		VDV0085	Flat Belt (Relay)	1	
1(2-H)		VDV0086	O Belt (Reel Drive)	1	
1(1-H)		VDV0087	Fan Belt (Capstan)	1	
1(2-C)		VDV0088	Counter Belt	1	
4(1-D)		VDV0089	F.F Belt	1	
3(9-C)		VDV0090	Counter Belt (1)	1	
2(8-E),6		VEG0112	Drum Unit	1	
6(6-C,D)		VEH0077	Upper Drum (Video Head)	1	
4(2-B)		VEP00206	Micro Switch Board Ass'y	1	
10(8-D)		VGB0060	Top Panel Badge	1	
10(3-I)		VGB0062	U-vision Badge	1	
9(2-F)		VGF0005	Protector	1	
10(4-A)		VGK0498	Cap	1	
10(3-H)		VGN1060	Plate	1	
10(2-D,E)		VGP0104	Bottom Cover	1	
10(5,6-C,D)		VGP0105	Rear Panel	1	
10(7-E,F)		VGP0106	Top Panel	1	
10(3-H)		VGP0126	Front Cover	1	
9(1,2,3-		VGP0160	Control Panel	1	
C,D)					
10(3,4-B,C)		VGP0456	Left Side Panel	1	
10(5,6-F,C)		VGP0457	Right Side Panel	1	
10(6-G)		VGQ0037	Holder (Right)	1	
10(4-A)		VGQ0038	Holder (Left)	1	
10(3-G,H)		VGT0113	Knob	4	
10(4-F)		VGU0088	Function Key	2	
10(4-F)		VGU0089	Function Key	3	
10(4-F)		VGU0090	Function Key	1	
10(4-F)		VGU0091	Function Key	1	
10(4-F)		VGU0092	Function Key	1	
2(5-C)		VHG0003	U-arm Ass'y	1	
2(5-D)		VHG0004	Stepped Gear	1	
2(6-D)		VHG0005	Unloading Gear Arm Ass'y	1	
2(6-D)		VHG0006	Drive Gear Ass'y	1	
2(3-D)		VHG0007	Timing Gear (2)	1	
2(2-D)		VHG0008	Timing Gear (1)	1	
2(5-E)		VHG0009	Drive Gear	1	
3(3-C),		VHG0010	Drive Gear	1	
4(5-E)					
7(2-D)		VHG0011	Gear Ass'y	1	
4(5-E)		VHG0012	Drive Gear	1	
4(5-D)		VHG0013	Drive Gear	1	
9(2,3,4-C)		VJB00201	Connector Panel Board	1	
8(3,4-B)		VJB00204	Front Panel P.C Board	1	
2(5-F)		VJB00205	Head P.C Board	1	
2(2-E)		VJB00208	Frequency Generator Board	1	
8(6-D)		VJB00210	Mic P.C Board	1	
2(7-E)		VJF0007	Holder (1)	1	
6(3,4-B)		VJH0057	Lug	2	
9(3,A,B)		VJH8	Lug	2	
9(2,3-B,		VJJ0035	RCA Pin	4	
4-T)					
1(5-F,G)		VJR0008	Wire Clamp	4	
1(2-B,7-E)		VJR0009	Wire Clamp	2	
9(1,2-E)		VJS1034	BNC Connector	2	
1(4-A)		VJS1036	Ext. Battery Jack	1	
5(3-D)		VJS1040	RF Connector	1	
8(5-F),		VJS1060	Jack Ass'y	4	
9(4-B)					
8(5-E)		VJS1061	Jack Ass'y	2	
9(1-D)		VJS1066	DIN Connector	1	
10(1-C,E,		VKA0012	Foot	4	
2-F,3-E)					
10(2-E,4-H)		VKH0022	Handle Arm	2	
10(3-C,6-H)		VKH0023	Base Holder	2	
10(3-E)		VKH0025	Handle Bar	1	
10(3-D,4-G)		VKH0026	Band Hook	2	
10(3-D)		VKH0027	Handle Base Ass'y (Left)	1	
10(4-G)		VKH0028	Handle Base Ass'y (Right)	1	
10(2-D)		VKH0029	Ribbon	1	
10(3,4-B,C)		VKN0009	Left Side Sheet	1	
10(5,6-F,G)		VKN0010	Right Side Sheet	1	
10(5-B)		VKU0083	Battery Cover	1	
10(1-D)		VKU0084	RF Cover	1	
1(5-B,D)		VMA2906	Nut Plate	3	
1(4-E,5-D)		VMA2907	Nut Angle	2	
1(4-E)		VMA2908	Nut Angle	1	
1(4-G)		VMA2909	Handle Holder	1	
1(5-H)		VMA2910	Nut Angle (1)	1	
1(6-G)		VMA2911	Nut Angle (2)	3	
1(6-C)		VMA2913	Nut Angle (2)	1	
1(3-D)		VMA2914	Handle Holder	1	
1(4-C)		VMA2915	Nut Plate	1	
1(4-B)		VMA2916	Nut Plate	1	
1(4-A)		VMA2917	Nut Plate	1	
1(4-E)		VMA2918	Nut Angle	1	
1(2-C)		VMA2919	Counter Bracket	1	
1(2-D)		VMA2920	RF Compartment	1	
1(3-F,3-G)		VMA2921	Motor Cap	2	
2(5-B)		VMA2922	Stepped Pulley Holder	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
2(5-B)		VMA2923	Plate	1	
2(7-C,D)		VMA2924	Guide	1	
2(3-C)		VMA2926	Bracket	1	
2(2-D)		VMA2927	Gear Holder	1	
2(8-G)		VMA2928	Plate	1	
2(3-F)		VMA2929	Plate	1	
2(4-F)		VMA2930	Holder	1	
2(5-E)		VMA2931	Plate	1	
2(3-C)		VMA2932	Tapping Plate	1	
2(3-C)		VMA2933	Bracket	1	
2(2-B)		VMA2934	Holder	1	
2(5-F)		VMA2935	A/C Head Base (3)	1	
2(6-F)		VMA2936	A/C Head Base (2)	1	
2(7-F)		VMA2937	A/C Head Base (1)	1	
3(6-G)		VMA2938	Bracket	1	
3(8-D,E)		VMA2939	Band Guide	1	
3(1-G)		VMA2940	Plate	1	
3(2-F)		VMA2941	Spring Hook	1	
4(3-E)		VMA2942	Plate	1	
4(5-D)		VMA2943	Gear Guide	1	
5(7-B)		VMA2945	Loading Arm (2)	1	
6(2-B)		VMA2946	Full Erase Head Bracket	1	
6(5-B)		VMA2947	Protector Release	1	
6(5-C)		VMA2948	L.E.D. Board	1	
6(7-C,D)		VMA2949	Wire Clamp	2	
7(4,5-C)		VMA2950	Spring Plate	2	
7(4-C)		VMA2951	Tapping Plate	2	
7(3-A,4-C)		VMA2952	Spring Plate	2	
7(3-C)		VMA2953	Lock Release	1	
7(2-C)		VMA2954	Cassette Holder	1	
7(1-B)		VMA2955	Bracket (Left)	1	
7(2-E)		VMA2956	Bracket (Right)	1	
7(4-C)		VMA2957	Special Washer	1	
10(1-D)		VMA2958	Plate	1	
10(4-G)		VMA2959	Bracket (Right)	1	
10(3-F)		VMA2960	Bracket (Left)	1	
9(2-B)		VMA2961	Nut Plate	1	
2(3-D)		VMA2962	Spring Holder	1	
7(2-B,3-D)		VMA2963	Tapping Plate	2	
2(8-C,D)		VMA2964	Loading Ring	1	
8(3-B)		VMA3175	Bracket	1	
2(4-F)		VMA3176	Angle	1	
3(3-A)		VMA3177	I.C Clamp	1	
3(3-G)		VMA3178	Washer	2	
4(1-C)		VMA3180	Solenoid Bracket	1	
5(3-A)		VMA3183	Mounting Base	1	
5(4-A)		VMA3184	Switch Mounting Plate	1	
6(5-B)		VMA3185	L.E.D. Holder	1	
6(2-D)		VMA3186	Brush Holder	1	
7(2-D)		VMA3187	Cassette Guide	1	
5(4-B)		VMA3188	Switch Mounting Plate	1	
7(5-C)		VMA3191	Plate	2	
1(3-E,4-G)		VMB0394	Left Spring	4	
1(3-E,4-G)		VMB0395	Spring	2	
2(5-B)		VMB0436	Spring	1	
2(6-C)		VMB0437	Spring	1	
2(8-D)		VMB0438	Coil Spring	1	
2(4-F,9-G)		VMB0439	Spring	2	
2(3-B)		VMB0440	Spring	1	
2(8-G)		VMB0441	Spring	1	
2(8-G)		VMB0442	Spring	1	
2(8-G)		VMB0443	Spring	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
2(9-F)		VMB0444	Spring	1	
2(3-F)		VMB0445	Spring	1	
2(6-F)		VMB0446	Spring	3	
3(5-C)		VMB0447	Spring	1	
3(4-B)		VMB0448	Spring	1	
3(5-B)		VMB0449	Spring	1	
3(4-E,		VMB0450	Spring	3	
7-D,F)					
3(8-C)		VMB0451	Spring	1	
3(8-B)		VMB0452	Spring	1	
3(5-E,7-F)		VMB0453	Spring	2	
3(7-D)		VMB0454	Spring	1	
3(5-B,6-B)		VMB0455	Spring	2	
3(6-C)		VMB0456	Spring	1	
3(2-G)		VMB0457	Spring	1	
3(1-G)		VMB0458	Spring	1	
4(3-D)		VMB0459	Spring	1	
4(4-C)		VMB0460	Spring	1	
4(6-C)		VMB0461	Spring	1	
4(4-B)		VMB0462	Spring	1	
5(4-B)		VMB0463	Leaf Spring	1	
5(5-E)		VMB0464	End Set Spring	1	
6(4-B)		VMB0465	Spring	1	
7(1-B)		VMB0466	Spring	1	
10(3-D,5-G)		VMB0467	Spring	2	
10(4-G)		VMB0468	Spring	1	
2(9-C)		VMB0485	Loading Arm Drive Lever	1	
1(4,5-E)		VME0032	Nylong Grommet	3	
1(4-D,5-C)		VME0033	Nylong Grommet	3	
1(4-F,5-E)		VME0034	Nylong Grommet	3	
1(5-E)		VME0035	Nylong Grommet	2	
1(4-F)		VME0036	Nylong Grommet	1	
3(5,6-C,		VMF0134	Brake Shoe	2	
6-F)					
7(4-E)		VMF0135	Felt	3	
3(8-E)		VMG0176	F.F Tire	1	
3(3-A)		VMK0168	Reel Detect P.C. Board	1	
1(5-G)		VML0675	Lock Lever	1	
1(3-D)		VML0676	Lock Lever	1	
1(2-G)		VML0677	Motor Bracket	1	
2(5-D)		VML0678	Arm	1	
2(9-C)		VML0679	Hinge	1	
2(3-B)		VML0680	Lock Finger	1	
2(8-G)		VML0681	Timing Arm	1	
2(9-F)		VML0682	Pressure Roller Pressure	1	
			Arm		
3(3-F)		VML0683	Arm	1	
3(6-D)		VML0684	Memory Lever	1	
3(6-D)		VML0685	Lock Lever	1	
3(4-B)		VML0686	Memory Lock Lever	1	
3(5-B)		VML0687	Brake Lever	1	
3(5-B)		VML0688	Brake Lever	1	
3(6-B)		VML0689	Brake Arm	1	
3(6-B)		VML0690	Loop Arm	1	
3(8-C)		VML0691	Rewind Lever	1	
3(7-E)		VML0692	Rewind Lever	1	
3(6-E,F)		VML0693	F.F Idler Arm	1	
3(6-F)		VML0694	Brake Lever	1	
3(5-B)		VML0695	Lever	1	
3(2-F)		VML0696	Bracket	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
4(4-D)		VML0697	F.F Main Lever	1	
4(4-E)		VML0698	Pull Lever	1	
4(5-B)		VML0699	Full REC Lever	1	
4(6-B)		VML0700	Dub Lever	1	
4(2-C)		VML0701	Lever	1	
3(7-F)		VML0702	Rewind Lever (2)	1	
4(1-C)		VML0745	Solenoid Lever	1	
5(5-E)		VML0746	Arm Guide	1	
8(3-B)		VML0747	Switch Lever	1	
1(5-D)		VMM0052	Rod	1	
3(3-E)		VMM0053	Rod	1	
4(3-C)		VMM0054	Rod	1	
2(4-F)		VMS1243	Stud	1	
2(7-G)		VMS1244	Stud	1	
4(1-A)		VMS1245	Spring Pin	1	
3(5-D)		VMS1246	Stud	1	
3(5-C)		VMS1247	Stud	1	
3(5-D)		VMS1248	Reel Disk Shaft	1	
3(4-C)		VMS1249	Stud	1	
3(5-D)		VMS1250	Stud	1	
3(7-B)		VMS1251	Stud	1	
3(7-E)		VMS1252	F.F Pulley Shaft	1	
3(2-G)		VMS1253	Shaft	1	
3(1-F)		VMS1254	Stud	1	
3(1,2-F)		VMS1255	Nut	2	
3(2-D)		VMS1256	Reel Shaft	1	
3(5-C)		VMS1257	Stud	1	
5(4-C)		VMS1258	Guide Pole	1	
5(2-C)		VMS1259	Stud	1	
5(7-B)		VMS1260	Guide Pole	1	
5(6-B)		VMS1261	Stud	1	
6(4-B)		VMS1262	Stud	1	
6(4-B)		VMS1263	Guide Pole	1	
7(2-A)		VMA1265	Spring Hook	1	
10(2-D,5-H)		VMS1266	Handle Screw	2	
10(1-C,6-B)		VMS1267	Lock Screw	2	
1(2-E)		VMS1269	Supply Reel Shaft	1	
2(6-B)		VMS1270	Shaft	1	
2(9-D)		VMS1271	Pressure Roller Shaft	1	
2(6-D)		VMS1272	Stud	1	
2(6-D)		VMS1273	Special Screw	1	
8(5-G)		VMS1366	L.E.D. Cap	1	
2(8-G)		VMS1386	Adjusting Nut	1	
10(5-B)		VMT0024	Cushion	1	
8(1-A)		VMT0025	Meter Cushion	1	
1(3-D,5-G),		VMX0118	Collar	3	
4(5-D)					
1(4-G)		VMX0119	Collar	1	
1(7-B)		VMX0120	Spacer Holder	1	
2(5-C)		VMX0161	Collar	1	
2(5-E)		VMX0162	Lock Ring	1	
2(6-E)		VMX0163	Slip Ring	1	
2(8-F)		VMX0164	Collar	1	
2(4-F),		VMX0165	Collar	2	
4(5-D)					
3(3-C)		VMX0166	Collar	1	
3(3,6-D)		VMX0167	Collar	2	
3(6-D)		VMX0168	Collar	1	
3(7-B)		VMX0169	Roller	1	
3(2-G)		VMX0171	Collar	1	
4(3-C,4-E)		VMX0173	Collar	3	
6(2-D)		VMX0175	Collar	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
7(1-C,2-E)		VMX0176	Collar	2	
3(6-D)		VMX0182	Washer	1	
5(4-C)		VMZ0197	Switch Fiber	1	
2(2-C,4-E)		VMZ0213	Spacer	5	
4(5-B)		VMZ0214	Insulator	1	
5(6-D)		VMZ0215	Insulator	1	
9(3,4-E)		VMZ0216	Sheet	1	
9(2,3-C,D)		VMZ0217	Insulator	1	
8(3-C),		VMZ0218	Sheet	2	
10(4-E)					
10(3-F,4-H)		VMZ0219	Sheet	2	
8(2-D)		VMZ0239	Spacer	2	
2(3-B)		VMZ0242	Protector	1	
11(3,4-D)		VPF0117	Polyesthylene Bag	1	
11(3,4-A,B)		VPG0506*	Accessary Case	1	
11(2-C,D)		VPG0775	Packing Case	1	
11(5,6-B)		VPN0460*	Top Cushion	1	
11(3-A,B)		VPN0461*	Bottom Cushion	1	
11(5-C)		VQF0546	Fan Bag	1	
10(1-D)		VQL0652	Label	1	
10(5-B)		VQL0715	Sticker (FCC)	1	
10(8-E)		VQL0749	Sticker	1	
1(2-G)		VRD0002	DC Motor	2	
8(3-B)		VRV0008	Variable Resistor	1	
8(4-C)		VRV0012	Variable Resistor	1	
8(4-C)		VRV0013	Variable Resistor	1	
8(3-A,B)		VRV0014	Variable Resistor	2	
6(2-D)		VSA0024	Slip Ring	1	
8(1-B)		VSE0029	Meter	1	
2(2,3-B),		VSJ0034	Solenoid	2	
4(1-B)					
2(3-E),		VSM0028	Micro Switch	3	
8(2-D)					
2(2-C),		VSM0029	Micro Switch	7	
4(2-B,C),					
5(4-A)					
4(5-B)		VSM0030	Micro Switch	1	
5(4-B)		VSM0031	Micro Switch	1	
3(6-F)		VSP0066	Push Switch	1	
3(4-B)		VSQ0067	Core	1	
6(3-C)		VSQ0079	Dew Sensor	1	
8(4-C)		VSR0006	Rotary Switch	1	
8(4-B)		VSS0033	Slide Switch	1	
8(4-B)		VSS0034	Slide Switch	1	
8(5-D)		VSS0035	Slide Switch	1	
1(5-E,F)		VXA0757	Side Panel Ass'y	2	
1(3-E,4-F)		VXA0758	Connection Angle Ass'y	1	
1(5-C,D)		VXA0759	Angle Ass'y	1	
1(4-C,D)		VXA0760	Slide Panel Ass'y	1	
1(4,5-D)		VXA0761	Angle Ass'y	1	
2(6-C)		VXA0762	Plate Ass'y	1	
2(5-D)		VXA0763	Plate Ass'y	1	
2(9-D)		VXA0764	Plate Ass'y	1	
2(9-D)		VXA0765	Plate Ass'y	1	
2(8-C)		VXA0766	Plate Ass'y	1	
3(3-B)		VXA0767	Idler Bracket Unit	1	
5(3-C,4-D)		VXA0768	Arm Guide Plate Unit	1	
5(2-B)		VXA0769	Photo-diode Unit	1	
5(5-C)		VXA0770	Adjust Plate Unit	1	
7(3-C)		VXA0771	Pin Ass'y	1	
8(2,3,4-		VXA0864	Front Frame Ass'y	1	
B,C,D)					

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
7(3,4-C,D)		VXA0865	Housing Unit (Right)	1	
7(2,3-A,B)		VXA0866	Housing Unit (Left)	1	
1(3,4-B,C)		VXA0868	Battery Holder Ass'y	1	
3(8-C)		VXD0042	Pulley Arm Ass'y	1	
3(1,2-F)		VXD0043	Bearing Ass'y	2	
2(5-B)		VXD0049	Bearing Holder Unit	1	
2(5-E)		VXD0050	Capstan Holder Ass'y	1	
1(5-B)		VXL0492	Loading Arm Guide Ass'y	1	
1(4-G)		VXL0493	Lever Ass'y	1	
1(3-G)		VXL0494	Lever Ass'y	1	
2(8-D)		VXL0495	Pressure Roller Arm Ass'y	1	
2(3-F)		VXL0498	Tape Life Arm Ass'y	1	
3(5,6-C)		VXL0499	Pressure Arm Unit	1	
3(7-C)		VXL0500	Lever Sub Unit	1	
3(3-E)		VXL0501	Lock Sub Unit	1	
3(8-C)		VXL0502	Play Lever Unit	1	
3(6,7-D)		VXL0503	F.F Lever Ass'y	1	
3(6-F)		VXL0504	REW Lever Unit	1	
3(6-E)		VXL0505	Tension Release Arm Ass'y	1	
3(8-D)		VXL0506	OFF Lever Sub Unit	1	
3(2-G)		VXL0507	Tension Arm Ass'y	1	
4(4-D)		VXL0508	Play Lever Unit	1	
4(3-D)		VXL0509	F.F Sub Lever Unit	1	
4(4-C)		VXL0510	Lever Select Arm Unit	1	
4(6-C)		VXL0511	Arm Ass'y	1	
4(4-B)		VXL0512	Pause Lock Unit	1	
4(6-D,E)		VXL0513	Play Lever Unit	1	
5(1-C)		VXL0514	Lever Unit	1	
5(5-C,D)		VXL0515	Loading Arm Unit	1	
5(6-C)		VXL0516	Connection Plate Unit	1	
7(1-C)		VXL0517	L.U. Arm Ass'y	1	
7(1-B)		VXL0518	L.L. Arm Ass'y	1	
7(2-E,3-D)		VXL0519	R.U. Arm Ass'y	1	
7(3-E,F)		VXL0520	R.L. Arm Ass'y	1	
2(7,8-G)		VXL0521	Swing Arm (1) Ass'y	1	
2(8,9-G)		VXL0567	Swing Arm (2) Ass'y	1	
2(8-F)		VXL0568	Arm Ass'y	1	
4(1-B,C,		VXM0023	Function Ass'y	1	
2-A,B)					
2(9-D)		VXP0206	Pressure Roller Ass'y	1	
3(8-E)		VXP0207	F.F Pulley Unit	1	
4(6-D)		VXP0208	Pulley Unit	1	
4(2-D)		VXP0209	Idler Unit	1	
6(4-B)		VXP0210	Guide Roller Ass'y	1	
1(7-G),		VXR0068	Supply Reel Table Unit	1	
3(9-D,E)					
3(9-D)		VXR0069	Takeup Reel Table Unit	1	
2(7-F)		VXR0044	Brush Ass'y	1	
6(2-D)		VXS0045	Brush Ass'y	1	
3(3-F)		VXZ0052	Brake Shoe Ass'y	1	
10(7-F,		VYF0077	Cassette Cover Ass'y	1	
7		VYF0106	Cassette Housing Ass'y	1	
		VYP0223	Front Panel Ass'y	1	
			Nut		
3		XNG2E		1	
2,5,7		XNG3ES		4	
3,4,6		XNG4ES		5	
5		XNG26H		1	
3		XNG3HS		1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			Badge Stopper		
10		XNK2FW		4	
			Screw		
2,3,6		XSB2+4FN		5	
2,10		XSB3+6FNS		4	
9,10		XSB3+8KS		19	
2,3,6,9,10		XSB3+8FNS		15	
6		XSB4+10BS		2	
10		XSB4+10KS		4	
10		XSB4+6FNS		10	
10		XSB3+18FNS		4	
2		XSN2+10BN		4	
5		XSN2+12BN		4	
2,6		XSN2+3BN		4	
1,2,6		XSN2+4BN		13	
2		XSN2+16BN		2	
2		XSN2+6BN		6	
4,8		XSN23+10BN		4	
6,7,8,10		XSN26+6BN		12	
1,6		XSNV3+6RS		3	
6,8		XSS2+4		4	
3		XSS26+6		1	
1		XSS3+4S		2	
10		XSS3+6KS		2	
1,5		XSS3+6S		13	
3		XSS3+8S		1	
9		XST3+10KS		2	
1		XST2+6		2	
2		XST3+10S		3	
2		XST3+12S		1	
2		XST3+4S		1	
4		XST3+5S		1	
2		XST3+20S		1	
5		XST3+10FNS		2	
10		XTB3+12B		4	
			Snap Ring		
3		XUC15FP		1	
2,3,4		XUC25FP		14	
2,3,4,5		XUC3FP		24	
7		XUC4FP		8	
2,3		XUC5FP		2	
			Spring Washer		
2,3,5		XWA2B		24	
4,8		XWA23B		4	
5		XWA26BN		1	
5		XWA3B		2	
3,4,6		XWA4B		5	
2		XWE2BN		1	
			Sword Tooth Washer		
2,10		XWC3A		6	
			Flate Washer		
3		XWG26		2	
2,4,5,6		XW3		5	
3		XWG4		1	
2		XWG2		3	
5		XWG2BN		4	
4,8		XWG23BN		4	
3		XWG3A7		1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
1,3,4		XWG3E11		8	
2		XWG35D8		1	
3		XWG4D65		3	
2,3,4		XWG4D8		8	
3,4		XWG4E14		2	
7		XWG5A9		4	
			Set Screw		
3,4		XXE3C3		3	
2,6		XXE3D4FTS		11	
1,2,3,4,5,		XYN3+C6S		73	
6,7,8					
1,2,3,4,5,		XYN3+F6S		52	
6,7					
1,2,7		XYN3+C10S		7	
1,6		XYN3+C8S		2	
5		XYN3+C6S		2	
2,4		XYN3+C14S		3	
3		XYN3+C5S		2	
8		XYN3+F8S		8	
1		XYN4+C8S		4	

ELECTRICAL REPLACEMENT PARTS LIST

Model No. NV-9400E

Notes:

1. * Be sure to make your orders of replacement parts according to this list.
   * "Ⓢ" in Remarks column indicates new parts.
2. IMPORTANT SAFETY NOTICE
   Components identified by △ have special characteristics important for safety.
   When replacing any of these components, use only the original ones.
3. Unless otherwise specified,
   All resistors are in OHMS (Ω), 1/4W ± 5% carbon. K=1,000Ω, M=1,000KΩ.
   All capacitors are in MICROFARADS (μF), ± 10% P=μμF.

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
		VEP00198	DEW SENSOR AMP. CIRCUIT	1	
			BOARD ASSY		
		VEP00199B1	S.S.G. CIRCUIT BOARD	1	
			ASSY		
		VEP0276B1	TRANSPORT CONTROL	1	
			CIRCUIT BOARD ASSY		
		VEP0277B1	SERVO/AUDIO CIRCUIT	1	
			BOARD ASSY		
		VEP0278B1	MOTOR DRIVE AMP. CIRCUIT	1	
			BOARD ASSY		
		VEP0363B1	VIDEO AMP. CIRCUIT	1	
			BOARD ASSY		
		VEP0364B1	PRE. AMP. CIRCUIT	1	
			BOARD ASSY		
		VEP0436B1	MIC. AMP. CIRCUIT	1	
			BOARD ASSY		
		VEP0840B1	COLOR CIRCUIT BOARD ASSY	1	
			Drum Terminal Circuit	1	
			Board		
			Connector Panel Circuit		
			Board		
			Fuse Circuit Board	1	
			Rec SW Circuit Board	1	
			Front Panel Circuit	1	
			Board		
			Head Terminal Circuit	1	
			Board		
			Micro SW Circuit Board	1	
			Reel Detect Circuit		
			Board		
			E.G. Terminal Circuit	1	
			Board		
			Limiter SW Circuit B	1	
			Board		
			MIC. Jack Circuit Board	1	
			LED Circuit Board	1	
			Photo Diode Circuit	1	
			Board		

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			TRANSPORT CONTROL CIRCUIT		
			BOARD ASSY		
			Integrated Circuits		
IC1		SN7453N		1	
IC2		AN605	Video Amp	1	
IC3,4		NE555V		2	
IC5		EHDRD3093S	Packaged Circuits	1	
			Transistors		
TR1		2SC1317R	Si NPN	1	
			AF Power Amp & Driver		
TR2		2SA564Q	Si PNP	1	
			General Use for		
			Small Signal		
TR3		2SC828Q	Si NPN	1	
			Small Signal Amp		
TR4		2SC1317R	Si NPN	1	
			AF Power Amp & Driver		
TR5		2SA564Q	Si PNP	1	
			General Use for		
			Small Signal		
TR6		2SC1317R	Si NPN	1	
			AF Power Amp & Driver		
TR7		2SC1162WTC	Si NPN	1	
TR8		2SC828Q	Si NPN	1	
			Small Signal Amp		
TR9		2SC1317R	Si NPN	1	
			AF Power Amp & Driver		
TR10		2SC564Q	Si NPN	1	
			General Use for		
			Small Signal		
TR11		2SC1317R	Si NPN	1	
			AF Power Amp & Driver		
TR12		2SC1162WTC	Si NPN	1	
TR13,14		2SA719R	Si PNP	2	
			AF Power Amp & Driver		
TR15-18		2SC828Q	Si NPN	4	
			Small Signal Amp		
TR19		2SA564Q	Si PNP	1	
			General Use for		
			Small Signal		
TR20-23		2SC828Q	Si NPN	4	
			Small Signal Amp		
TR24		2SA564Q	Si NPN	1	
			General Use for		
			Small Signal		
TR25,26		2SC828Q	Si NPN	2	
			Small Signal Amp		
			Diode		
D1-7,10-21		MA150	Si	19	
			High Speed Switching		
DA1,2		DAP-4		2	
DA3		DAN-4		1	
DA4,5		DAP-4		2	
			Resistors		
R1-5		ERD14VJ103	10K	5	
R6		ERD14VJ182	1.8K	1	
R7		ERD14VJ102	1K	1	
R10		ERD14VJ224	220K	1	
R11,12		ERD14VJ681	680	2	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R13		ERD14VJ680	68	1	
R14		ERD14VJ103	10K	1	
R15,16		ERD14VJ223	22K	2	
R17		ERD14VJ104	100K	1	
R18		ERD14VJ273	27K	1	
R19		ERD14VJ472	4.7K	1	
R20		ERD14VJ472	4.7K	1	
R21		VRV0001	Variable 10K	1	
R22		ERD14VJ182	1.8K	1	
R23		ERD14VJ103	10K	1	
R24		ERD14VJ223	22K	1	
R25,26		ERD14VJ103	10K	2	
R27		ERD14VJ153	15K	1	
R28		ERD14VJ103	10K	1	
R29		ERD14VJ223	22K	1	
R31		ERD14VJ472	4.7K	1	
R32		ERD14VJ332	3.3K	1	
R33		ERD14VJ223	22K	1	
R34		ERD14VJ103	10K	1	
R35		ERD14VJ472	4.7K	1	
R36		ERD14VJ473	47K	1	
R37		ERD14VJ472	4.7K	1	
R38		ERD50VJ181	180	1	
R39		ERF14VJ153	15K	1	
R40		ERD14VJ472	4.7K	1	
R41		ERD14VJ103	10K	1	
R42		ERD14VJ223	22K	1	
R43		ERD14VJ332	3.3K	1	
R44		ERF14VJ221	220	1	
R45		ERF14VJ472	4.7K	1	
R46		ERD14VJ473	47K	1	
R47		ERD14VJ472	4.7K	1	
R48		ERD14VJ471	470	1	
R49		ERD14VJ103	10K	1	
R50		ERD14VJ223	22K	1	
R51		ERD14VJ563	56K	1	
R52		ERD14VJ222	2.2K	1	
R53		ERD14VJ473	47K	1	
R54		ERD14VJ103	10K	1	
R55-57		ERD14VJ473	47K	3	
R58		ERD14VJ223	22K	1	
R59		ERD14VJ824	820K	1	
R60		VRV0002	Variable 470K	1	
R61		ERD14VJ473	47K	1	
R62		ERD14VJ223	22K	1	
R63		VRV0003	Variable 4.7K	1	
R64		ERD14VJ473	47K	1	
R65,66		ERD14VJ103	10K	2	
R67		ERD14VJ102	1K	1	
R68		ERD14VJ473	47K	1	
R69		ERD14VJ103	10K	1	
R70		ERD14VJ153	15K	1	
R71		ERD14VJ103	10K	1	
R72		ERD14VJ824	820K	1	
R73		ERD14VJ103	10K	1	
R74		ERD14VJ102	1K	1	
R75		ERD14VJ103	10K	1	
R76		ERD14VJ223	22K	1	
R77		ERD14VJ471	470	1	
R78		ERD14VJ472	4.7K	1	
R79		ERD14VJ103	10K	1	
R80		ERD14VJ223	22K	1	
R81		ERD14VJ824	820K	1	
R82		ERD14VJ474	470K	1	
R83		ERD14VJ104	100K	1	
R84		ERD14VJ154	150K	1	
R85,86		ERD14VJ562	5.6K	2	
R87		ERD14VJ472	4.7K	1	
R88		ERD14VJ562	5.6K	1	
R89,90		ERD14VJ104	100K	2	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R91		ERD14VJ223	22K	1	
R93		ERD14VJ473	47K	1	
R94-96		ERD14VJ103	10K	3	
R100		ERD14VJ823	82K	1	
R101		ERD14VJ123	12K	1	
			Capacitors		
C1		ECEA10V33L	Electrolytic 10V 33	1	
C2		ECEA16V10L	Electrolytic 16V 10	1	
C3		ECSZ25EF1R5Q	Tantalum 25V 1.5	1	
C4		ECSZ25EF1R0Q	Tantalum 25V 1.0	1	
C5		ECSZ25EF4R7Q	Tantalum 25V 4.7	1	
C6		ECEA16V100L	Electrolytic 16V 100	1	
C7		ECSZ16EF4R5Q	Tantalum 16V 4.5	1	
C8		ECQM05103KZ	Mylar 50V 0.01	1	
C9		ECSZ25EFR47Q	Tantalum 25V 0.47	1	
C10		ECEA16V100L	Electrolytic 16V 100	1	
C11		ECEA16N10	Non-polarity Electrolytic	1	
			16V 10		
C12		ECEA16N4R7	Non-polarity Electrolytic	1	
			16V 4.7		
C13-15		ECQM05103KZ	Mylar 50V 0.01	3	
C16		ECSZ25EF1R0Q	Tantalum 25V 1.0	1	
C17		ECEA16V10L	Electrolytic 16V 10	1	
C18		ECQM05103KZ	Mylar 50V 0.01	1	
C19		ECSZ25EF1R0Q	Tantalum 25V 1.0	1	
C20		ECQM05223	Mylar 50V 0.022	1	
C21		ECEA16V10L	Electrolytic 16V 10	1	
C22		ECEA16V220L	Electrolytic 16V 220	1	
C23		ECEA10V220L	Electrolytic 10V 220	1	
C24,25		ECEA10V47L	Electrolytic 10V 47	2	
C26		ECEA16V10L	Electrolytic 16V 10	1	
C27		ECEA10V100L	Electrolytic 10V 100	1	
C28		ECSZ25EFR47Q	Tantalum 25V 0.47	1	
			SERVO CONTROL CIRCUIT		
			BOARD ASSY		
			Integrated Circuits		
IC1		SN76670N	Dis. Cri.	1	
IC2-5		UA741TC	Amp.	4	
IC6		VC2019	Switching	1	
IC7		AN301	VTR Servo Control Circuit	1	
IC8		NE555V	Cap. Multi.	1	
IC9		VC4019	Rec. Phase	1	
IC10,11		UA741TC	Amp.	2	
IC12,13		VC4019		2	
			Transistors		
TR1		2SK30A-0	FET	1	
TR2		2SC828Q	Si NPN	1	
			Small Signal Amp.		
TR3,4		2SA564Q	Si PNP	2	
			General Use for		
			Small Signal		

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
TR5		2SC828Q	Si NPN	1	
			Small Signal Amp.		
TR6		2SK30A-0		1	
TR7,8		2SC828Q	Si NPN	2	
			Small Signal Amp.		
TR9		2SC458D		1	
TR10-14		2SC828Q	Si NPN	5	
			Small Signal Amp.		
TR15		2SK30A-0	FET	1	
TR16		2SC828Q	Si NPN	1	
			Small Signal Amp.		
TR17		2SK30A-0	FET	1	
TR18,19		2SC828Q	Si NPN	2	
			Small Signal Amp.		
TR20		2SC1645	Si NPN	1	
TR21-24		2SC828Q	Si NPN	4	
			Small Signal Amp.		
			Diodes		
D1-31		MA150	Si	31	
			High Speed Switching		
D32		MA26W	Si	1	
			Voltage Compensation		
D33-35		MA150	Si	3	
			High Speed Switching		
			Resistors		
R1		ERC12GK106	Solid 10M	1	
R2,3		ERD14VJ103	10K	2	
R4		ERD14VJ222	2.2K	1	
R5		ERD14VJ562	5.6K	1	
R6		ERD14VJ222	2.2K	1	
R7		ERD14VJ333	33K	1	
R8		ERD14VJ103	10K	1	
R9		ERD14VJ392	3.9K	1	
R10		ERD14VJ222	2.2K	1	
R11		ERD14VJ102	1K	1	
R12		ERD14VJ392	3.9K	1	
R13,14		ERD14VJ102	1K	2	
R15,16		ERD14VJ473	47K	2	
R17		ERD14VJ102	1K	1	
R18		ERD14VJ681	680	1	
R19		ERD14VJ123	12K	1	
R20		ERD14VJ122	1.2K	1	
R21		ERD14VJ333	33K	1	
R22		ERD14VJ392	3.9K	1	
R23		VRV0004	Variable 1K	1	
R24		ERD14VJ472	4.7K	1	
R25		ERD14VJ103	10K	1	
R26		ERD14VJ223	22K	1	
R27		ERD14VJ183	18K	1	
R28		ERD14VJ105	1M	1	
R29		ERD14VJ103	10K	1	
R30		ERD14VJ474	470K	1	
R31		ERD14VJ103	10K	1	
R32		ERD14VJ682	6.8K	1	
R33-36		ERD14VJ103	10K	4	
R37		ERD14VJ474	470K	1	
R38		ERD14VJ562	5.6K	1	
R39		ERD14VJ104	100K	1	
R40		ERD14VJ223	22K	1	
R41		ERD14VJ155	1500K	1	
R42		ERD14VJ123	12K	1	
R43		ERD14VJ823	82K	1	
R44		ERD14VJ103	10K	1	
R45		ERD14VJ563	56K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R46		ERD14VJ824	820K	1	
R47		ERD14VJ183	18K	1	
R49		ERD14VJ151	150	1	
R50		ERD14VJ103	10K	1	
R51		ERD14VJ152	1.5K	1	
R52		ERD14VJ564	560K	1	
R53		ERD14VJ823	82K	1	
R54		ERD14VJ684	680K	1	
R56		ERD14VJ473	47K	1	
R57		ERD14VJ221	220	1	
R58		ERD14VJ272	2.7K	1	
R59		ERD14VJ223	22K	1	
R60		ERD14VJ562	5.6K	1	
R61		ERD14VJ563	56K	1	
R62		ERD14VJ104	100K	1	
R63		ERD14VJ332	3.3K	1	
R64		ERD14VJ333	33K	1	
R65		ERD14VJ103	10K	1	
R66		ERD14VJ473	47K	1	
R67		ERD14VJ104	100K	1	
R69-71		ERD14VJ103	10K	3	
R72		ERD14VJ563	56K	1	
R73		ERD14VJ184	180K	1	
R74		VRV0012	Variable 100K	1	
R75		ERD14VJ274	270K	1	
R76		ECKD14VJ223	22K	1	
R77		ERD14VJ223	22K	1	
R78		ERD14VJ332	3.3K	1	
R79		ERD14VJ103	10K	1	
R80		ERD14VJ473	47K	1	
R81		ERD14VJ103	10K	1	
R82		ERD14VJ473	47K	1	
R83		ERD14VJ682	6.8K	1	
R84		ERD14VJ123	12K	1	
R85		VRV0005	Variable 47K	1	
R86		ERD14VJ473	47K	1	
R87		ERD14VJ332	3.3K	1	
R88		ERD14VJ103	10K	1	
R89		ERD14VJ223	22K	1	
R90		ERD14VJ332	3.3K	1	
R91		ERD14VJ332	3.3K	1	
R92		VRV0015	Variable 330Ω	1	
R93		ERD14VJ182	1.8K	1	
R94		ERD14VJ101	100	1	
R95		ERD14VJ473	47K	1	
R96		ERD14VJ104	100K	1	
R97		ERD14VJ333	33K	1	
R98		ERD14VJ105	1M	1	
R99,100		ERD14VJ103	10K	2	
R101		ERD14VJ104	100K	1	
R102		ERD14VJ222	22K	1	
R103		VRV0009	Variable 490Ω	1	
R104		ERD14VJ332	3.3K	1	
R105		ERD14VJ683	68K	1	
R106		ERD14VJ155	1500K	1	
R107		ERD14VJ473	47K	1	
R108		ERD14VJ153	15K	1	
R109		ERD14VJ272	2.7K	1	
R110		ERD14VJ103	10K	1	
R111		ERD14VJ823	82K	1	
R112		ERD14VJ103	10K	1	
R113		ERD14VJ471	470	1	
R114		ERD14VJ102	1K	1	
R115		ERD14VJ223	22K	1	
R116		ERD14VJ104	100K	1	
R117		ERD14VJ332	3.3K	1	
R118		ERD14VJ223	22K	1	
R119		ERD14VJ103	10K	1	
R120		ERD14VJ223	22K	1	
R121		ERD14VJ563	56K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R122		ERD14VJ104	100K	1	
R123		ERD14VJ473	47K	1	
R124		ERD14VJ223	22K	1	
R125		ERD14VJ473	47K	1	
R127		ERD14VJ392	3.9K	1	
R128		ERD14VJ151	150	1	
R129		ERD14VJ473	47K	1	
R130		ERD14VJ563	56K	1	
R131		ERD14VJ103	10K	1	
R132		ERD14VJ682	6.8K	1	
R133		ERD14VJ224	220K	1	
R134		ERD14VJ104	100K	1	
R135		ERD14VJ563	56K	1	
R136		ERD14VJ183	18K	1	
R137		ERD14VJ681	680	1	
R139		ERD14VJ153	15K	1	
			Capacitors		
C1		ECEA10V220L	Electrolytic 10V 220	1	
C2		ECQM05224KZ	Mylar 50V 0.22	1	
C3		ECEA16V10L	Electrolytic 16V 10	1	
C4		ECQM05153KZ	Mylar 50V 0.015	1	
C5		ECQM05102KZ	Mylar 50V 0.001	1	
C6,7		ECEA16V10L	Electrolytic 16V 10	2	
C8		ECQM05223KZ	Mylar 50V 0.022	1	
C9		ECEA16V10L	Electrolytic 16V 10	1	
C10,11		ECSZ16EF4R7Q	Tantalum 16V 4.7	2	
C12		ECEA16V10L	Electrolytic 16V 10	1	
C13		ECQS1223KZ	Styrol 125V 0.022	1	
C14		ECQS1183KZ	Styrol 125V 0.018	1	
C15,16		ECSZ16EF22Q	Tantalum 16V 22	2	
C17,18		ECSZ10EF10Q	Tantalum 10V 10	2	
C19-21		ECQM05223KZ	Mylar 50V 0.022	3	
C22		ECEA10V220L	Electrolytic 10V 220	1	
C23		ECQM05223KZ	Mylar 50V 0.022	1	
C24,25		ECEA10V33L	Electrolytic 10V 33	2	
C26		ECEA10V47L	Electrolytic 10V 47	1	
C27		ECKD1H101KB	Ceramic 50V 100P	1	
C28		ECEA10V100L	Electrolytic 10V 100	1	
C29		ECQM05103KZ	Mylar 50V 0.01	1	
C30		ECEA10V47L	Electrolytic 10V 47	1	
C31		ECKD1H221KB	Ceramic ±10% 50V 22P	1	
C32		ECEA10V220L	Electrolytic 10V 220	1	
C33		ECQM05103KZ	Mylar 50V 0.01	1	
C34		ECEA16V10L	Electrolytic 16V 10	1	
C35,36		ECQM05683KZ	Mylar 50V 0.068	2	
C37		ECSZ35EFR47Q	Tantalum 35V 0.47	1	
C38		ECEA25V4R7L	Electrolytic 25V 4.7	1	
C39		ECQM05104KZ	Mylar 50V 0.1	1	
C40		ECSZ25EF1Q	Tantalum 25V 1	1	
C41		ECEA10V3R3L	Electrolytic 10V 3.3	1	
C42,43		ECEA50V1L	Electrolytic 50V 1	2	
C44-46		ECQM05682KZ	Mylar 50V 0.0068	3	
C47		ECQM05102KZ	Mylar 50V 0.001	1	
C48		ECQM05103KZ	Mylar 50V 0.01	1	
C49		ECQM05223KZ	Mylar 50V 0.022	1	
C50		ECQM05273KZ	Mylar 50V 0.027	1	
C51		ECQM05153KZ	Mylar 50V 0.015	1	
C52		ECQM05103KZ	Mylar 50V 0.01	1	
C53		ECEA10V220L	Electrolytic 10V 220	1	
C54		ECQM05223KZ	Mylar 50V 0.022	1	
C55		ECQM05472KZ	Mylar 50V 0.0047	1	
C56,57		ECQM05562KZ	Mylar 50V 0.0056	2	
C58		ECSZ16EF4R7Q	Tantalum 16V 4.7	1	
C59,60		ECSZ16EF10Q	Tantalum 16V 10	2	
C61,62		ECQM05223KZ	Mylar 50V 0.022	2	
C63		ECEA10V220L	Electrolytic 10V 220	1	
C64,65		ECQM05223KZ	Mylar 50V 0.022	2	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
C66	ECEA10V47L	Electrolytic 10V 47	1	
C67	ECSZ16EF10Q	Tantalum 16V 10	1	
C68,69	ECQM05103KZ	Mylar 50V 0.01	2	
C70	ECKD1H220KB	Ceramic 50V 22P	1	
C71,72	ECKD1H820KB	Ceramic 50V 82P	2	
C73	ECQM05223KZ	Mylar 50V 0.022	1	
C74	ECQM05102KZ	Mylar 50V 0.001	1	
C75	ECKD1H820KB	Ceramic 50V 82P	1	
		Coils		
L1	VLQ0047	100mH	1	
L2	VLQ0072		1	
L3,4	VLQ70L331K	Peaking 330µH	2	
		AUDIO CIRCUIT BOARD ASSY		
		Integrated Circuits		
IC1	SN76001N	Line Amp.	1	
IC2	AN264	Dual Low-noise Pre-amp.	1	
IC3	AN904	Dual Independent	1	
		Differential Amp.		
IC4	SN76001N	Line Amp.	1	
		Transistors		
TR1-4	2SC828Q	Si NPN	4	
		Small Signal Amp.		
TR5	2SC458D	Si NPN	1	
TR6	2SC828Q	Si NPN	1	
		Small Signal Amp.		
TR7,8	2SC1162WT	Si NPN	2	
TR9	2SC1317R	Si NPN	1	
		AF Power Amp. & Driver		
TR10-13	2SC828Q	Si NPN	4	
		Small Signal Amp.		
TR14	2SC458D	Si NPN	1	
		Diodes		
D1-4	MA150	Si	4	
		High Speed Switching		
D5,6	1N60	Si	2	
D7-13	MA150	Si	7	
		High Speed Switching		
D14,15	1N60	Si	2	
D16	MA150	Si	1	
		High Speed Switching		
		Resistors		
R1	ERD14VJ223	22K	1	
R2	ERD14VJ473	47K	1	
R3,4	ERD14VJ103	10K	2	
R5	ERD14VJ181	180	1	
R6	ERD14VJ103	10K	1	
R7	ERD14VJ104	100K	1	
R8	ERD14VJ102	1K	1	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
R9	ERD14VJ392	3.9	1	
R10	ERD14VJ102	1K	1	
R11	ERD14VJ103	10K	1	
R12	ERD14VJ103	10K	1	
R13	ERD14VJ181	180	1	
R14	ERD14VJ223	22K	1	
R15	ERD14VJ680	68	1	
R16	ERD14VJ332	3.3K	1	
R17	ERD14VJ102	1K	1	
R18	ERD14VJ101	100	1	
R19	ERD14VJ220	22	1	
R20	ERD14VJ470	47	1	
R21	ERD14VJ150	15	1	
R22,23	VRV0001	Variable 10K	2	
R24	ERD14VJ333	33K	1	
R25	ERD14VJ472	4.7K	1	
R26	ERD14VJ151	150	1	
R27	ERD14VJ392	3.9K	1	
R28	ERD14VJ471	470	1	
R29	ERD14VJ151	150	1	
R30	ERD14VJ270	27	1	
R31	ERD14VJ123	12K	1	
R32	ERD14VJ221	220	1	
R33	ERD14VJ563	56K	1	
R34	ERD14VJ224	220K	1	
R35	ERD14VJ222	2.2K	1	
R36,37	ERD14VJ183	18K	2	
R38	ERD14VJ471	470	1	
R39	ERD14VJ101	100	1	
R40	ERD14VJ124	120K	1	
R41	ERD14VJ222	2.2K	1	
R42	ERD14VJ101	100	1	
R43	ERD14VJ124	120K	1	
R44	ERD14VJ222	2.2K	1	
R45	ERD14VJ103	10K	1	
R46	VRV0006	Variable 22K	1	
R47	ERD14VJ271	270	1	
R48	ERD14VJ392	3.9K	1	
R49	ERD14VJ332	3.3K	1	
R50	ERD14VJ563	56K	1	
R51	ERD14VJ332	3.3K	1	
R52	ERD14VJ682	6.8K	1	
R53	ERD14VJ103	10K	1	
R54	VRV0006	Variable 22K	1	
R55,56	ERD14VJ102	1K	2	
R57	ERD14VJ822	8.2K	1	
R58	ERD14VJ123	12K	1	
R59	ERD14VJ682	6.8K	1	
R60	ERD14VJ561	560	1	
R61	ERD14VJ472	4.7K	1	
R62	ERD14VJ563	56K	1	
R63,64	ERD14VJ103	10K	2	
R65,66	ERD14VJ682	6.8K	2	
R67,68	ERD14VJ820	82	2	
R69,70	ERD14VJ2R2	2.2K	2	
R71	ERD14VJ102	1K	1	
R72	ERD14VJ682	6.8K	1	
R73	ERD14VJ153	15K	1	
R74	ERD14VJ473	47K	1	
R75	VRV0005	Variable 47K	1	
R76	ERD14VJ223	22K	1	
R78,79	ERD14VJ103	10K	2	
R80	ERD14VJ181	180	1	
R81	ERD14VJ103	10K	1	
R82	ERD14VJ104	100K	1	
R83	ERD14VJ392	3.9K	1	
R84	ERD14VJ102	1K	1	
R85	ERD14VJ332	3.3K	1	
R86	ERD14VJ181	180	1	
R87	ERD14VJ223	22K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R88		ERD14VJ680	68	1	
R89		ERD14VJ102	1K	1	
R90		ERD14VJ101	100	1	
R91		ERD14VJ220	22	1	
R92		ERD14VJ561	560	1	
R93		ERD14VJ150	15	1	
R94,95		VRV0001	Variable 10K	2	
R96		ERD14VJ151	150	1	
R97		ERD14VJ333	33K	1	
R98		ERD14VJ472	4.7K	1	
R99		ERD14VJ392	3.9K	1	
R100		ERD14VJ471	470	1	
R101		ERD14VJ151	150	1	
R102		ERD14VJ270	27	1	
R103		ERD14VJ123	12K	1	
R104		ERD14VJ221	220	1	
R105,106		ERD14VJ103	10K	2	
R107		VRV0006	Variable 22K	1	
R108		ERD14VJ682	6.8K	1	
R109		ERD14VJ222	2.2K	1	
			Capacitors		
C1		ECEA50V1L	Electrolytic 50V 1	1	
C2		ECEA6V220L	Electrolytic 6V 220	1	
C3		ECEA50V1L	Electrolytic 50V 1	1	
C4		ECEA6V220L	Electrolytic 6V 220	1	
C5		ECEA50V1L	Electrolytic 50V 1	1	
C6		ECKD1H471KB	Ceramic 50V 470P	1	
C7-9		ECEA10V100L	Electrolytic 10V 100	3	
C10		ECKD1H270KB	Ceramic 50V 27P	1	
C11		ECKD1H680KB	Ceramic 50V 68P	1	
C12		ECEA16V10L	Electrolytic 16V 10	1	
C13		ECEA10V47L	Electrolytic 10V 47	1	
C14		ECEA16V10L	Electrolytic 16V 10	1	
C15		ECQM05152KZ	Mylar 50V 0.0015	1	
C16		ECSZ10EF10Q	Tantalum 10V 10	1	
C18		ECQM05393KZ	Mylar 50V 0.039	1	
C19		ECKD1H121KB	Ceramic 50V 120P	1	
C20		ECKD1H151KB	Ceramic 50V 150P	1	
C21		ECEA10V47L	Electrolytic 10V 47	1	
C22		ECKD681KB	Ceramic 50V 680P	1	
C23,24		ECSZ10EF4R7Q	Tantalum 10V 4.7	2	
C25,26		ECKD1H330KB	Ceramic 50V 33P	2	
C27		ECEA16V10L	Electrolytic 16V 10	1	
C28,29		ECEA10V47L	Electrolytic 10V 47	2	
C30		ECEA16V10L	Electrolytic 16V 10	1	
C31		ECEA10V47L	Electrolytic 10V 47	1	
C32		ECQM05152KZ	Mylar 50V 0.0015	1	
C33		ECQM05273KZ	Mylar 50V 0.027	1	
C34		ECEA16V10L	Electrolytic 16V 10	1	
C35		ECSZ10EFR15Q	Tantalum 10V 0.15	1	
C36		ECQM05273KZ	Mylar 50V 0.027	1	
C37		ECEA16V10L	Electrolytic 16V 10	1	
C38		ECQM05102KZ	Mylar 50V 0.001	1	
C39,40		ECEA10V47L	Electrolytic 10V 47	2	
C41		ECEA16V10L	Electrolytic 16V 10	1	
C42,43		ECEA10V47L	Electrolytic 10V 47	2	
C44-46		ECQM05153KZ	Mylar 50V 0.015	3	
C47		ECQM05183KZ	Mylar 50V 0.018	1	
C48		ECEA10V47L	Electrolytic 10V 47	1	
C49		ECSZ10EF15Q	Tantalum 10V 15	1	
C50		ECEA10V220L	Electrolytic 10V 22	1	
C51		ECQF6222KZ	Polystyrene 0.022	1	
C52		ECQF6682KZ	Polystyrene 0.068	1	
C53		ECEA50V1L	Electrolytic 50V 1	1	
C54		ECEA6V220L	Electrolytic 6V 220	1	
C55		ECEA50V1H	Electrolytic 50V 1	1	
C56		ECEA6V220L	Electrolytic 6V 22	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
C57		ECEA50V1L	Electrolytic 50V 1	1	
C58		ECKD1H471KB	Ceramic 50V 470P	1	
C59-61		ECEA10V100L	Electrolytic 10V 100	3	
C62		ECKD1H270KB	Ceramic 50V 27P	1	
C63		ECKD1H680KB	Ceramic 50V 68P	1	
C64		ECEA16V10L	Electrolytic 16V 10	1	
C65		ECEA10V47L	Electrolytic 10V 47	1	
C66		ECEA16V10L	Electrolytic 16V 10	1	
C67		ECQM05152KZ	Mylar 50V 0.0015	1	
C68		ECQM05153	Mylar 50V 0.015	1	
C69		ECQM05333KZ	Mylar 50V 0.033	1	
C70		ECSZ10EF10Q	Tantalum 10V 10	1	
C71		ECEA10V47L	Electrolytic 10V 47	1	
C72		ECQM05273KZ	Mylar 50V 0.027	1	
C73		ECQM05102KZ	Mylar 50V 0.001	1	
C74		ECEA10V220L	Electrolytic 10V 220	1	
C75		ECQM05104KZ	Mylar 50V 0.1	1	
C76		ECEA10V220L	Electrolytic 10V 220	1	
C77		ECQM05104KZ	Mylar 50V 0.1	1	
C78		ECEA16V10L	Electrolytic 16V 10	1	
			Coils		
L1		VLQ70L221K	Peaking 220μH	1	
L2		VLQ0052		1	
L3,4		VLQ0049	Choke 18mH	2	
L5		VLQ0050	Choke 2.2mH	1	
L6		VLQ0049	Choke 1mH	1	
L7		VLQ0051	Choke 2.7mH	1	
L8		VLQ70L221K	Peaking 220μH	1	
L9		VLQ0052		1	
L10		VLQ0050	Choke 2.2mH	1	
			Transformers		
T1		VLT0084	Oscillation	1	
			Switches		
S1,2		VSS0031	Slide	2	
			MIC AMP. CIRCUIT BOARD		
			ASSY		
			Integrated Circuits		
IC1,2		BA308	Amp.	2	
			Resistors		
R2		ERD14VJ681	680	1	
R3		ERD14VJ154	150K	1	
R4		ERD14VJ101	100	1	
R5		ERD14VJ332	3.3K	1	
R6		ERD14VJ683	68K	1	
R7		ERD14VJ183	18K	1	
R8		ERD14VJ102	1K	1	
R9		VRV0006	Variable 22K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R11		ERD14VJ681	680	1	
R12		ERD14VJ154	150K	1	
R13		ERD14VJ101	100	1	
R14		ERD14VJ332	3.3K	1	
R15		ERD14VJ683	68K	1	
R16		ERD14VJ183	18K	1	
R17		ERD14VJ102	1K	1	
R18		VRV0006	Variable 22K	1	
			Capacitors		
C1		ECQM05332MZ	Mylar 50V 0.0033	1	
C2		ECEA50V1L	Electrolytic 50V 1	1	
C3		ECEA10V47L	Electrolytic 10V 47	1	
C4		ECKD1H221B	Ceramic 50V 220P	1	
C5		ECEA10V47L	Electrolytic 10V 47	1	
C6		ECEA16V10L	Electrolytic 16V 10	1	
C7		ECQM05332MZ	Mylar 50V 0.0033	1	
C8		ECEA50V1L	Electrolytic 50V 1	1	
C9		ECEA10V47L	Electrolytic 10V 47	1	
C10		ECKD1H221B	Ceramic 50V 220P	1	
C11		ECEA10V47L	Electrolytic 10V 47	1	
C12		ECEA16V10L	Electrolytic 16V 10	1	
			VIDEO CIRCUIT BOARD ASSY		
			Integrated Circuits		
IC1		VC2021	Switching	1	
IC2		AN302	VTR Video AGC Circuit	1	
IC3		VC2019	Switching	1	
IC4		SN76670N	FM Demodulator	1	
IC5		VC2011	Amp.	1	
IC6		VC2019	Switching	1	
IC7		VC2011	Amp.	1	
IC8		BA308	Mix. Amp.	1	
IC9		VC4019	M.M.	1	
			Transistors		
TR1-8		2SC829C	Si NPN RF Amp.	8	
TR9		2SA564Q	Si PNP	1	
			General Use for		
			Small Signal		
TR10		2SC829C	Si NPN RF Amp.	1	
TR11		2SC719R	Si NPN	1	
TR12,13		2SC1317R	Si NPN	2	
			AF Power Amp. & Driver		
TR14		2SA719R	Si NPN	1	
TR15-27		2SC829C	Si NPN RF Amp.	13	
TR28		2SA564Q	Si PNP	1	
			General Use for	1	
			Small Signal		
TR29-33		2SC829C	Si NPN RF Amp.	5	
TR41,42		2SC829C	Si NPN RF Amp.	2	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			Diodes		
D1		MA26W	Si	1	
			Voltage Compensation		
D2-5		MA150	Si	4	
			High Speed Switching		
D6,7		1S1007	Si	2	
D8-10		MA150	Si	3	
			High Speed Switching		
D11,12		1N60	Si	2	
D13-16		MA150	Si	4	
			High Speed Switching		
D17,18		1N60	Si	2	
D19		MA150	Si	1	
			High Speed Switching		
			Resistors		
R1		ERD14VJ393	39K	1	
R2		ERD14VJ563	56K	1	
R3		ERD14VJ561	560	1	
R4		ERD14VJ103	10K	1	
R5		ERD14VJ680	68	1	
R6		ERD14VJ471	470	1	
R7		ERD14VJ102	1K	1	
R8		ERD14VJ224	220K	1	
R9		ERD14VJ392	3.9K	1	
R10		ERD14VJ183	18K	1	
R11		ERD14VJ472	4.7K	1	
R12		ERD14VJ332	3.3K	1	
R13		ERD14VJ271	270	1	
R14		ERD14VJ222	2.2K	1	
R15		VRV0003	Variable 4.7K	1	
R16		ERD14VJ563	56K	1	
R17		ERD14VJ333	33K	1	
R18		ERD14VJ272	2.7K	1	
R19		ERD14VJ103	10K	1	
R20		ERD14VJ105	1M	1	
R21,22		ERD14VJ472	4.7K	2	
R23		ERD14VJ105	1M	1	
R24		VRV0007	Variable 220	1	
R25		ERD14VJ331	330	1	
R26		ERD14VJ182	1.8K	1	
R27		ERD14VJ822	8.2K	1	
R28		ERD14VJ222	2.2K	1	
R29		ERD14VJ101	100	1	
R30		ERD14VJ472	4.7K	1	
R31		VRV0008	Variable 2.2K	1	
R32		ERD14VJ560	56	1	
R33,34		ERD14VJ222	2.2K	2	
R35		ERD14VJ103	10K	1	
R36		ERD14VJ182	1.8K	1	
R37		ERD14VJ152	1.5K	1	
R38		ERD14VJ222	2.2K	1	
R39		ERD14VJ821	820	1	
R40		ERD14VJ181	180	1	
R41		ERD14VJ821	820	1	
R42		ERD14VJ122	1.2K	1	
R43		ERD14VJ102	1K	1	
R44		VRV0009	Variable 470	1	
R45		VRV0004	Variable 1K	1	
R46		ERD14VJ102	1K	1	
R47		ERD14VJ153	15K	1	
R48		ERD14VJ332	3.3K	1	
R49		ERD14VJ222	2.2K	1	
R50,51		ERD14VJ102	1K	2	
R52		ERD14VJ222	2.2K	1	
R53		ERD14VJ152	1.5K	1	
R54		ERD14VJ183	18K	1	
R55		ERD14VJ103	10K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R56		ERD14VJ561	560	1	
R57		ERD14VJ103	10K	1	
R58		ERD14VJ220	22	1	
R59		ERD14VJ103	10K	1	
R60		ERD14VJ102	1K	1	
R61,62		ERD14VJ562	5.6K	2	
R63		ERD14VJ102	1K	1	
R64,65		ERD14VJ220	22	2	
R66,67		ERD14VJ4R7	4.7	2	
R68		ERD14VJ472	4.7K	1	
R69		ERD14VJ682	6.8K	1	
R70		ERD14VJ562	5.6K	1	
R71		ERD14VJ100	10	1	
R72		ERD14VJ103	10K	1	
R73		ERD14VJ472	4.7K	1	
R74		ERD14VJ102	1K	1	
R75		ERD14VJ560	56	1	
R76		VRV0004	Variable 1K	1	
R77		ERD14VJ821	820	1	
R78		ERD14VJ562	5.6K	1	
R79		ERD14VJ471	470	1	
R80		VRV0004	Variable 1K	1	
R81		ERD14VJ153	15K	1	
R82		VRV0006	Variable 22K	1	
R83		ERD14VJ154	150K	1	
R84		ERD14VJ103	10K	1	
R85		ERD14VJ102	1K	1	
R86		ERD14VJ103	10K	1	
R87		ERD14VJ222	2.2K	1	
R88		ERD14VJ391	390	1	
R89		ERD14VJ272	2.7K	1	
R90,91		ERD14VJ102	1K	2	
R92		ERD14VJ683	68K	1	
R93		ERD14VJ153	15K	1	
R94		VRV0006	Variable 22K	1	
R95		ERD14VJ102	1K	1	
R96		VRV0008	Variable 2.2K	1	
R97		ERD14VJ561	560	1	
R98		ERD14VJ102	1K	1	
R99		ERD14VJ681	680	1	
R100		ERD14VJ332	3.3K	1	
R101		ERD14VJ123	12K	1	
R102		ERD14VJ391	390	1	
R103		ERD14VJ152	1.5K	1	
R104		ERD14VJ121	120	1	
R105		ERD14VJ331	330	1	
R106		ERD14VJ271	270	1	
R108		ERD14VJ681	680	1	
R109		ERD14VJ471	470	1	
R110		ERD14VJ102	1K	1	
R111		ERD14VJ102	1K	1	
R112		VRV0008	Variable 2.2K	1	
R113		ERD14VJ471	470	1	
R114		ERD14VJ273	27K	1	
R115		ERD14VJ183	18K	1	
R116		ERD14VJ391	390	1	
R117		ERD14VJ332	3.3K	1	
R118		ERD14VJ331	330	1	
R119		ERD14VJ222	2.2K	1	
R120		ERD14VJ472	4.7K	1	
R121		ERD14VJ151	150	1	
R122		ERD14VJ102	1K	1	
R123		ERD14VJ331	330	1	
R124		ERD14VJ221	220	1	
R125		ERD14VJ392	3.9K	1	
R126		ERD14VJ152	1.5K	1	
R127		ERD14VJ271	270	1	
R128		ERD14VJ102	1K	1	
R129		ERD14VJ222	2.2K	1	
R130		ERD14VJ681	680	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R131		ERD14VJ221	220	1	
R132		ERD14VJ100	10	1	
R133		ERD14VJ102	1K	1	
R134		ERD14VJ103	10K	1	
R135,136		VRV0004	Variable 1K	2	
R137		ERD14VJ682	6.8K	1	
R138		ERD14VJ102	1K	1	
R139		ERD14VJ392	3.9K	1	
R140		ERD14VJ103	10K	1	
R141		ERD14VJ152	1.5K	1	
R142		ERD14VJ562	5.6K	1	
R143,144		ERD14VJ332	3.3K	2	
R145		ERD14VJ102	1K	1	
R146		ERD14VJ104	100K	1	
R147		ERD14VJ682	6.8K	1	
R148		ERD14VJ560	56	1	
R149		ERD14VJ103	10K	1	
R150		ERD14VJ101	100	1	
R151		ERD14VJ271	270	1	
R152		ERD14VJ820	82	1	
R153		ERD14VJ330	33	1	
R154		ERD14VJ822	8.2K	1	
R155		ERD14VJ122	1.2K	1	
R156		ERD14VJ152	1.5K	1	
R157,158		ERD14VJ222	2.2K	2	
R159		ERD14VJ154	150K	1	
R160		ERD14VJ472	4.7K	1	
R161		ERD14VJ102	1K	1	
R162		ERD14VJ222	2.2K	1	
R163		ERD14VJ333	33K	1	
R164		VRV0001	Variable 10K	1	
R165,166		ERD14VJ222	2.2K	2	
R167		ERD14VJ334	330K	1	
R168		VRV0001	Variable 10K	1	
R169		ERD14VJ563	56K	1	
R170		ERD14VJ222	2.2K	1	
R171		ERD14VJ332	3.3K	1	
R172		ERD14VJ472	4.7K	1	
R173		ERD14VJ222	2.2K	1	
R174		ERD14VJ103	10K	1	
R175		ERD14VJ153	15K	1	
R176		ERD14VJ103	10K	1	
R177		ERD14VJ560	56	1	
R178		ERD14VJ102	1K	1	
R180		ERD14VJ561	560	1	
R181		ERD14VJ471	470	1	
R201		ERD14VJ820	82	1	
R202		ERD14VJ470	47	1	
R203		ERD14VJ102	1K	1	
R204		ERD14VJ681	680	1	
R205,206		ERD14VJ102	1K	2	
			Capacitors		
C1,2		ECEA10V47L	Electrolytic 10V 47	2	
C3		ECKD1E103KB	Ceramic 25V 0.01	1	
C5		ECKD1E103KB	Ceramic 25V 0.01	1	
C6-9		ECEA10V47L	Electrolytic 10V 47	4	
C10		ECEA10V100L	Electrolytic 10V 100	1	
C11		ECKD1E473KB	Ceramic 25V 0.047	1	
C12,13		ECEA25V3R3L	Electrolytic 25V 3.3	2	
C14		ECEA10V47L	Electrolytic 10V 47	1	
C15		ECEA10V47L	Electrolytic 10V 47	1	
C16		ECKD1E103KB	Ceramic 25V 0.01	1	
C17		ECKD1H391JA	Ceramic 50V 390P	1	
C18,19		ECEA16V10L	Electrolytic 16V 10	2	
C20		ECKD1E473KB	Ceramic 25V 0.047	1	
C21		ECEA10V100L	Electrolytic 10V 100	1	
C23		ECKD1E473KB	Ceramic 25V 0.047	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
C25		ECKD1H270JA	Ceramic 50V 27P	1	
C26		ECSZ10EFR15Q	Tantalum 10V 0.15	1	
C27,28		ECQM05333KZ	Mylar 50V 0.033	1	
C29		ECKD1E103KB	Ceramic 25V 0.01	1	
C30		ECEA10V47L	Electrolytic 10V 47	1	
C31		ECKD1E473KB	Ceramic 25V 0.047	1	
C32		ECQM05331KZ	Mylar 50V 0.00033	1	
C33		ECKD1E473KB	Ceramic 25V 0.047	1	
C34		ECQM05333KZ	Mylar 50V 0.033	1	
C35		ECEA10V47L	Electrolytic 10V 47	1	
C36		ECQM05333KZ	Mylar 50V 0.033	1	
C37		ECEA16V100L	Electrolytic 16V 100	1	
C38		ECKD1E223KB	Ceramic 25V 0.022	1	
C39		ECKD1E473KB	Ceramic 25V 0.047	1	
C40,41		ECQM05333KZ	Mylar 50V 0.033	2	
C42		ECEA16V47L	Electrolytic 16V 47	1	
C43		ECCF1H050D	CERamic 50V 5P	1	
C44		ECKD1E473KB	Ceramic 25V 0.047	1	
C45		ECKD1H470JA	Ceramic 50V 47P	1	
C46		ECKD1H181JA	Ceramic 50V 180P	1	
C47		ECEA10V47L	Electrolytic 10V 47	1	
C48		ECKD1E473KB	Ceramic 25V 0.047	1	
C49		ECKD1H331JA	Ceramic 50V 330P	1	
C50		ECQM05223KZ	Mylar 50V 0.022	1	
C51		ECEA10V47L	Electrolytic 10V 47	1	
C52		ECKD1E473KB	Ceramic 25V 0.047	1	
C53		ECKD1E103KB	Ceramic 25V 0.01	1	
C54-56		ECKD1E473KB	Ceramic 25V 0.047	3	
C57		ECEA10V47L	Electrolytic 10V 47	1	
C58		ECEA16V10L	Electrolytic 16V 10	1	
C59,60		ECKD1E473KB	Ceramic 25V 0.047	2	
C61		ECEA10V47L	Electrolytic 10V 47	1	
C62		ECQM05223KZ	Mylar 50V 0.022	1	
C63		ECKD1H220JA	Ceramic 50V 22P	1	
C64		ECKD1H181JA	Ceramic 50V 180P	1	
C65		ECEA10V47L	Electrolytic 10V 47	1	
C66		ECKD1E473KB	Ceramic 25V 0.047	1	
C67		ECEA10V47L	Electrolytic 10V 47	1	
C68		ECKD1H680JA	Ceramic 50V 68P	1	
C69		ECKD1H470JA	Ceramic 50V 47P	1	
C70		ECSZ10EF15Q	Tantalum 10V 15	1	
C71		ECSZ10EF22Q	Tantalum 10V 22	1	
C72-75		ECSZ10EF47Q	Tantalum 10V 47	4	
C76		ECKD1E103KB	Ceramic 25V 0.01	1	
C77		ECEA10V47L	Electrolytic 10V 47	1	
C78		ECKD1E473KB	Ceramic 25V 0.047	1	
C79,80		ECEA10V47L	Electrolytic 10V 47	2	
C81		ECKD1E473KB	Ceramic 25V 0.047	1	
C82		ECEA10V47L	Electrolytic 10V 47	1	
C83		ECKD1H680JA	Ceramic 50V 68P	1	
C84		ECEA10V47L	Electrolytic 10V 47	1	
C85		ECKD1E473KB	Ceramic 25V 0.047	1	
C86		ECKD1H331JA	Ceramic 50V 330	1	
C87		ECEA10V47L	Electrolytic 10V 47	1	
C88		ECEA10V100L	Electrolytic 10V 100	1	
C89		ECKD1H151JA	Ceramic 50V 150P	1	
C90		ECKD1E102KB	Ceramic 25V 0.001	1	
C91		ECKD1H471JA	Ceramic 50V 470P	1	
C92		ECKD1H180JA	Ceramic 50V 18P	1	
C93		ECEA50V1L	Electrolytic 50V 1	1	
C94		ECEA10V47L	Electrolytic 10V 47	1	
C95		ECEA50V1L	Electrolytic 50V 1	1	
C96		ECKD1E473KB	Ceramic 25V 0.047	1	
C97		ECEA10V47L	Electrolytic 10V 47	1	
C98		ECKD1H471JA	Ceramic 50V 470P	1	
C99		ECKD1E473KB	Ceramic 25V 0.047	1	
C100		ECEA6V470L	Electrolytic 6V 470	1	
C101		ECEA10V47L	Electrolytic 10V 47	1	
C102		ECKD1E473KB	Ceramic 25V 0.047	1	
C103		ECSZ35EFR22Q	Tantalum 35V 22	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
C104		ECEA16V1L	Electrolytic 16V 1	1	
C105		ECEA10V47L	Electrolytic 10V 47	1	
C106		ECKD1E102KB	Ceramic 25V 0.001	1	
C107		ECKD1E473KB	Ceramic 25V 0.047	1	
C108		ECEA16V10L	Electrolytic 16V 10	1	
C109		ECEA10V470L	Electrolytic 10V 470	1	
C110		ECEA10V47L	Electrolytic 10V 47	1	
C111		ECEA10V100L	Electrolytic 10V 100	1	
C112		ECKD1H151JA	Ceramic 50V 150P	1	
C113		ECKD1E473KB	Ceramic 25V 0.047	1	
C114		ECSZ35EFR15Q	Tantalum 35V 0.15	1	
C115		ECKD1H330JA	Ceramic 50V 33P	1	
C116		ECKD1H121JA	Ceramic 50V 120P	1	
C117		ECEA16V10L	Electrolytic 16V 10	1	
C118		ECEA10V47L	Electrolytic 10V 47	1	
C119		ECEA50V1L	Electrolytic 50V 1	1	
C120,121		ECEA10V47L	Electrolytic 10V 47	2	
C122		ECKD1E473KB	Ceramic 25V 0.047	1	
C123		ECKD1E102KB	Ceramic 25V 0.001	1	
C124		ECQM05273KZ	Mylar 50V 0.027	1	
C125		ECKD1H150JA	Ceramic 50V 15P	1	
C126		ECKD1E473KB	Ceramic 25V 0.047	1	
C127		ECEA10V100L	Electrolytic 10V 100	1	
C128		ECKD1H100JA	Ceramic 50V 100	1	
C129,130		ECKD1E223KB	Ceramic 25V 0.0023	2	
C132		ECKD1E223KB	Ceramic 25V 0.0223	1	
			Coils		
L1-3		VLQ70L221K	Peaking 220μH	3	
L4		VLQ70L470K	Peaking 47μH	1	
L5,6		VLQ70L221K	Peaking 220μH	2	
L7		VLQ70L101K	Peaking 100μH	1	
L8		VLQ70L560K	Peaking 56μH	1	
L9		VLQ70L221K	Peaking 220μH	1	
L10		VLQ70L5R6K	Peaking 5.6μH	1	
L11		VLQ70L101K	Peaking 100μH	1	
L12-15		VLQ70L221K	Peaking 220μH	4	
L16		VLQ70L220K	Peaking 22μH	1	
L17		VLQ70L221K	Peaking 220μH	1	
L18		VLQ70L180K	Peaking 18μH	1	
L19		VLQ70L221K	Peaking 220μH	1	
L20		VLQ70L101K	Peaking 100μH	1	
L21,22		VLQ70L221K	Peaking 220μH	2	
L23		VLQ70L820K	Peaking 82μH	1	
			Filters		
LPF1		VLF0046	LPF	1	
LPF2		VLF0047	LPF	1	
LPF1		VLF0055	HPF	1	
DF1		VLF0049	Demodulator	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			FM MODULATOR CIRCUIT		
			BOARD ASSY		
			Transistors		
TR34,35		2N2369		2	
			Resistors		
R207		VRV0004	Variable 1K	1	
R208,209		ERD14VJ122	1.2K	2	
R210		ERD14VJ151	150	3	
R211		ERD14VJ331	330	1	
R212,213		ERD14VJ682	6.8K	2	
R214		ERD14VJ331	330	1	
R215		ERD14VJ181	180	1	
			Capacitors		
C133		VCK0008	Line-pass 22P	1	
C134		ECCD1H390MC	Ceramic 50V 39P	1	
C135		ECCD1H330MC	Ceramic 50V 33P	1	
C136		ECV1ZW20X53	Trimmer 53P	1	
C137		VCK0009	Line-pass 1000P	1	
C138		ECEA10V47L	Electrolytic 10V 47	1	
C139		VCK0008	Line-pass 22P	1	
			Coils		
L24		VLQ70L101K	Peaking 100μH	1	
			Transformers		
T1		VLT0085	FM	1	
			Miscellaneous		
		VSC0293	Shield Case	1	
		VSC0294	Shield Case Cover	1	
		VSC0295	Shield Case Cover	1	
		VSC0296	Shield Case Cover	1	
			PRE-AMP. CIRCUIT BOARD		
			ASSY		
			Integrated Circuits		
IC1		AN318	VTR DC Servo Control	1	
			Circuit		
IC2-4		6A753	Amp.	3	
IC5		AN316	VTR Drop-out Compensation	1	
			Circuit		
IC6		BA308	Amp.	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			Transistors		
TR1		3SK30A-0	F.E.T.	1	
TR2-4		2SC829C	Si NPN RF Amp.	3	
TR6-9		2SC1317R	Si NPN	4	
			AF Power Amp. & Driver		
TR10-13		2SC829C	Si NPN RF Amp.	4	
TR14		2SK30A-0	Si NPN F.E.T.	1	
TR15		2SC829C	Si NPN RF Amp.	1	
			Diodes		
D1-4		MA150	Si	4	
			High Speed Switching		
D5		1N60	Si	1	
			Resistors		
R1,2		ERD14VJ103	10K	2	
R3		ERC12GK106	Solid 10M	1	
R4		ERD14VJ562	5.6K	1	
R5		ERD14VJ103	10K	1	
R6,7		ERD14VJ473	47K	2	
R8		ERD14VJ222	2.2K	1	
R9		ERD14VJ273	27K	1	
R10,11		VRV0005	Variable 47K	2	
R12		ERD14VJ273	27K	1	
R13		ERG3AVJ273	Metal 3W 27K	1	
R14		VRV0001	Variable 10K	1	
R15		ERD14VJ332	3.3K	1	
R16		ERD14VJ103	10K	1	
R17		ERD14VJ223	22K	1	
R18		ERD14VJ103	10K	1	
R19,20		ERD14VJ222	2.2K	2	
R21		ERD14VJ393	39K	1	
R22		ERD14VJ223	22K	1	
R23		ERD14VJ823	82K	1	
R24		ERD14VJ103	10K	1	
R25		ERD14VJ472	4.7K	1	
R26		ERD14VJ101	100	1	
R29		ERD14VJ4R7	4.7	1	
R30		ERD14VJ101	100	1	
R31		ERD14VJ103	10K	1	
R32		ERD14VJ102	1K	1	
R33		ERD14VJ103	10K	1	
R34		ERD14VJ102	1K	1	
R35		VRV0006	Variable 22K	1	
R36		ERD14VJ331	330	1	
R37		ERD14VJ471	470	1	
R38		VRV0011	Variable 100	1	
R39		ERD14VJ150	15	1	
R40		ERD14VJ4R7	4.7	1	
R41		ERD14VJ102	1K	1	
R42		ERD14VJ103	10K	1	
R43		ERD14VJ102	1K	1	
R44		ERD14VJ103	10K	1	
R45		ERD14VJ331	330	1	
R46		VRV0006	Variable 22K	1	
R47		ERD14VJ471	470	1	
R48,49		ERD14VJ102	1K	2	
R50		ERD14VJ153	15K	1	
R51		ERD14VJ103	10K	1	
R52		VRV0008	Variable 2.2K	1	
R53		ERD14VJ103	10K	1	
R54		ERD14VJ153	15K	1	
R55		ERD14VJ682	6.8K	1	
R56		ERD14VJ221	220	1	
R57		VRV0008	Variable 2.2K	1	
R58		ERD14VJ271	270	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R59		ERD14VJ821	820	1	
R60		ERD14VJ391	390	1	
R61		ERD14VJ100	10	1	
R62		ERD14VJ122	1.2K	1	
R63		ERD14VJ103	10K	1	
R64		ERD14VJ152	1.5K	1	
R65		ERD14VJ102	1K	1	
R66		ERD14VJ391	390	1	
R67		ERD14VJ103	10K	1	
R68		ERD14VJ562	5.6K	1	
R69		ERD14VJ222	2.2K	1	
R70		ERD14VJ471	470	1	
R71		ERD14VJ153	15K	1	
R72		ERD14VJ562	5.6K	1	
R73,74		ERD14VJ102	1K	2	
R75		ERD14VJ222	2.2K	1	
R76		ERD14VJ102	1K	1	
R77		ERD14VJ391	390	1	
R78		ERD14VJ152	1.5K	1	
R81		ERD14VJ223	22K	1	
			Capacitors		
C1		ECQM05822	Mylar 50V 0.0082	1	
C2		ECEA16V10L	Electrolytic 16V 10	1	
C3		ECEA50V47L	Electrolytic 50V 47	1	
C4,5		ECQM05103KZ	Mylar 50V 0.01	2	
C6,7		ECQM05333KZ	Mylar 50V 0.033	2	
C8		ECQS1103A	Styrol 50V 0.01	1	
C9		ECQM05104KZ	Mylar 50V 0.1	1	
C10		ECQM05103KZ	Mylar 50V 0.01	1	
C11		ECEA10V47L	Electrolytic 10V 47	1	
C12		ECEA10V220L	Electrolytic 10V 220	1	
C13		ECQM05473KZ	Mylar 50V 0.047	1	
C14,15		ECQM05183KZ	Mylar 50V 0.018	2	
C16		ECEA10V100L	Electrolytic 10V 100	1	
C17		ECQM05104KZ	Mylar 50V 0.1	1	
C18		VCV0004	Trimmer 50P	1	
C19		ECKD1H220JA	Ceramic 50V 22P	1	
C20		ECQM05273KZ	Mylar 50V 0.027	1	
C21		ECKD1E223KB	Ceramic 25V 0.022	1	
C22		ECEA10V47L	Electrolytic 10V 47	1	
C23		ECQM05223KZ	Mylar 50V 0.022	1	
C24		ECEA10V47L	Electrolytic 10V 47	1	
C25		ECQM05104KZ	Mylar 50V 0.1	1	
C26		VCV0004	Trimmer 50P	1	
C27		ECKD1H220JA	Ceramic 50V 22P	1	
C28		ECQM05273KZ	Mylar 50V 0.027	1	
C29		ECKD1E223KB	Ceramic 25V 0.022	1	
C30		ECEA10V47L	Electrolytic 10V 47	1	
C31		ECQM05223KZ	Mylar 50V 0.022	1	
C32		ECKD1E473KB	Ceramic 25V 0.047	1	
C33		ECEA10V100L	Electrolytic 10V 100	1	
C34		ECQM05233KZ	Mylar 50V 0.022	1	
C35		ECQM05103KZ	Mylar 50V 0.01	1	
C36		ECEA10V47L	Electrolytic 10V 47	1	
C37		ECKD1E223KB	Ceramic 25V 0.022	1	
C38		ECKD1E473KB	Ceramic 25V 0.047	1	
C39		ECEA10V47L	Electrolytic 10V 47	1	
C40		ECQM05273KZ	Mylar 50V 0.027	1	
C41,42		ECQM05473KZ	Mylar 50V 0.047	2	
C43		ECKD1E103KB	Ceramic 25V 0.01	1	
C44-46		ECQM05103KZ	Mylar 50V 0.01	3	
C47		ECQM05223KZ	Mylar 50V 0.022	1	
C48		ECKD1E103KB	Ceramic 25V 0.01	1	
C49		ECEA10V47L	Electrolytic 10V 47	1	
C50		ECKD1E473KB	Ceramic 25V 0.047	1	
C51		ECQM05103KZ	Mylar 50V 0.01	1	
C52		ECQM05223KZ	Mylar 50V 0.022	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
C53		ECKD1H101JA	Ceramic 50V 100P	1	
C54		ECKD1E102KB	Ceramic 25V 0.001	1	
C55		ECQM05222KZ	Ceramic 50V 0.0022	1	
C56		ECEA50V1L	Electrolytic 50V 1	1	
C57		ECKD1H560JA	Ceramic 50V 56P	1	
C58		ECQM05273KZ	Mylar 50V 0.027	1	
C59		ECEA10V47L	Electrolytic 10V 47	1	
C60		ECKD1E473KB	Ceramic 25V 0.047	1	
C61		ECQM05223KZ	Mylar 50V 0.022	1	
C62		ECEA16V10L	Electrolytic 16V 10	1	
C63		ECSZ10EFR68Q	Tantalum 10V 0.68	1	
C64		ECKD1H221JA	Ceramic 50V 220P	1	
C65		ECKD1H151JA	Ceramic 50V 150P	1	
C66		ECKD1H5R0JA	Ceramic 50V 5.0P	1	
C67		ECKD1E473KB	Ceramic 25V 0.047	1	
			Coils		
L1		VLQ0047	100mH	1	
L2		VLQ70L221K	Peaking 220μH	1	
L3		VLQ70L680K	Peaking 68μH	1	
L4,5		VLQ70L221K	Peaking 220μH	2	
L6		VLQ70L680K	Peaking 68μH	1	
L7		VLQ70L221K	Peaking 220μH	1	
L8		VLQ0073	Peakin	1	
L9		VLQ70L5R5K	Peaking 5.5μH	2	
L10,11		VLQ70L221K	Peaking 220μH	2	
L12		VLQ70L271K	Peaking 270μH	1	
L13		VLQ70L120K	Peaking 12μH	1	
			Delay Line		
DL1		EFDEN045A12	1H	1	
			Filters		
HPF1		VLF0050	HPF	1	
LPF1		VLF0051	LPF	1	
			COLOR CIRCUIT BOARD ASSY		
			Integrated Circuits		
IC1		AN302	VTR Video AGC Circuit	1	
IC2		SN76514NA	Banalce Mod.	1	
IC3,4		SN7660N	Balance Mod.	2	
IC5		UA741TC	Amp.	1	
IC6		SN7660N	H. Discri.	1	
IC7,8		UA741TC	Amp.	2	
			Transistors		
TR1-13		2SC829C	Si NPN RF Amp.	13	
TR14		2SA564Q	Si NPN	1	
			General Use for		
			Small Signal		

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
TR15,17,18		2SC829C	Si NPN RF Amp.	3	
TR19		2SA564Q	Si PNP	1	
			General Use for		
			Small Signal		
TR20-22		2SC829C	Si NPN RF Amp.	3	
TR23		2SA564Q	Si PNP	1	
			General Use for		
			Small Signal		
TR24		2SK30A-0	Si F.E.T.	1	
			Diodes		
D1-6,8-11		MA150	Si	10	
			High Speed Switching		
D12,13		MA26W	Si	2	
			Voltage Compensation		
D14		MX-1	Varactor	1	
C15-26		MA150	Si	12	
			High Speed Switching		
			Resistors		
R1		ERD14VJ561	560	1	
R2		ERD14VJ183	18K	1	
R3		ERD14VJ682	6.8K	1	
R4		ERD14VJ471	470	1	
R5		ERD14VJ102	1K	1	
R6		ERD14VJ561	560	1	
R7		ERD14VJ391	390	1	
R8		ERD14VJ124	120K	1	
R9		ERD14VJ182	1.8K	1	
R10		VRV0001	Variable 10K	1	
R11		ERD14VJ332	33K	1	
R12		ERD14VJ222	2.2K	1	
R13		ERD14VJ103	10K	1	
R14		ERD14VJ102	1K	1	
R15,16		ERD14VJ332	3.3K	2	
R17,18		ERD14VJ103	10K	2	
R19		ERD14VJ332	3.3K	1	
R20		ERD14VJ101	100	1	
R21		ERD14VJ393	39K	1	
R22		ERD14VJ333	33K	1	
R23		ERD14VJ224	220K	1	
R24		ERD14VJ271	270	1	
R25		ERD14VJ681	680	1	
R26		ERD14VJ221	220	1	
R27		VRV0006	Variable 22K	1	
R28		ERD14VJ473	47K	1	
R30		ERD14VJ561	560	1	
R31		ERD14VJ102	1K	1	
R32		ERD14VJ102	1K	1	
R33		ERD14VJ562	5.6K	1	
R34		ERD14VJ103	10K	1	
R35		ERD14VJ122	1.2K	1	
R36		ERD14VJ182	1.8K	1	
R37		ERD14VJ102	1K	1	
R38		ERD14VJ562	5.6K	1	
R39		ERD14VJ103	10K	1	
R40		ERD14VJ562	5.6K	1	
R41		ERD14VJ182	1.8K	1	
R42		ERD14VJ152	1.5K	1	
R43		ERD14VJ102	1K	1	
R44		ERD14VJ103	10K	1	
R45		ERD14VJ393	39K	1	
R46		ERD14VJ222	2.2K	1	
R47		ERD14VJ562	5.6K	1	
R48		ERD14VJ332	3.3K	1	
R49		ERD14VJ153	15K	1	
R50		ERD14VJ183	18K	1	
R51		ERD14VJ102	1K	1	
R52		ERD14VJ392	3.9K	1	
R53		VRV0006	Variable 22K	1	
R54		ERD14VJ101	100	1	
R55		ERD14VJ102	1K	1	
R56		ERD14VJ222	2.2K	1	
R57		ERD14VJ221	220	1	
R58		ERD14VJ102	1K	1	
R60		ERD14VJ102	1K	1	
R61		ERD14VJ103	10K	1	
R62		ERD14VJ472	4.7K	1	
R63		ERD14VJ471	470	1	
R64		ERD14VJ102	1K	1	
R65		ERD14VJ181	180	1	
R66,67		ERD14VJ393	39K	2	
R68		ERD14VJ124	120K	1	
R69		ERD14VJ681	680	1	
R70		VRV0008	Variable 2.2K	1	
R71		ERD14VJ182	1.8K	1	
R72		ERD14VJ104	100K	1	
R73		ERD14VJ103	10K	1	
R74		ERD14VJ392	3.9K	1	
R75		ERD14VJ562	5.6K	1	
R76,77		ERD14VJ220	22	2	
R78		ERD14VJ821	820	1	
R79,80		ERD14VJ182	1.8K	2	
R81		ERD14VJ393	39K	1	
R82		ERD14VJ103	10K	1	
R83		VRV0006	Variable 22K	1	
R84		ERD14VJ682	6.8K	1	
R85		ERD14VJ102	1K	1	
R86		ERD14VJ681	680	1	
R89		ERD14VJ102	1K	1	
R90		ERD14VJ103	10K	1	
R91		ERD14VJ332	3.3K	1	
R92		ERD14VJ272	2.7K	1	
R93		ERD14VJ562	5.6K	1	
R94		ERD14VJ272	2.7K	1	
R95		ERD14VJ562	5.6K	1	
R96		ERD14VJ152	1.5K	1	
R97		ERD14VJ271	270	1	
R98		ERD14VJ273	27K	1	
R99		ERD14VJ684	680K	1	
R100		ERD14VJ104	100K	1	
R101		ERD14VJ472	4.7K	1	
R103		ERD14VJ181	180	1	
R104		ERD14VJ222	2.2K	1	
R105		ERD14VJ562	5.6K	1	
R106		ERD14VJ103	10K	1	
R107		VRV0005	Variable 47K	1	
R108		ERD14VJ472	4.7K	1	
R109		ERD14VJ103	10K	1	
R110		ERD14VJ122	1.2K	1	
R111		VRV0001	Variable 10K	1	
R112		ERD14VJ392	3.9K	1	
R113		ERD14VJ821	820	1	
R114		ERD14VJ220	22	1	
R115		ERD14VJ102	1K	1	
R116		ERD14VJ821	820	1	
R117,118		ERD14VJ103	10K	2	
R119		ERD14VJ123	12K	1	
R120,121		ERD14VJ332	3.3K	2	
R122		ERD14VJ562	5.6K	1	
R123		ERD14VJ472	4.7K	1	
R124		ERD14VJ123	12K	1	
R125		ERD14VJ153	15K	1	
R126		ERD14VJ562	5.6K	2	
R128		ERD14VJ332	3.3K	1	
R129		ERD14VJ103	10K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R130		ERD14VJ822	8.2K	1	
R131		ERD14VJ223	22K	1	
R132		ERD14VJ562	5.6K	1	
R133		ERD14VJ103	10K	1	
R134		ERD14VJ222	2.2K	1	
R135		VRV0001	Variable 10K	1	
R136		ERD14VJ392	3.9K	1	
R137		ERD14VJ102	1K	1	
R138		ERD14VJ105	1M	1	
R139		ERD14VJ822	8.2K	1	
R201		ERD14VJ153	15K	1	
			Capacitors		
C1,2		ECKD1H560JA	Ceramic 50V 56P	2	
C3		ECQM05103KZ	Mylar 50V 0.01	1	
C4		ECKD1H101JA	Ceramic 50V 100P	1	
C5		ECKD1E473KB	Ceramic 25V 0.047	1	
C6		ECQA10V47L	Electrolytic 10V 47	1	
C8		ECKD1H331JA	Ceramic 50V 330P	1	
C9		ECQM05103KZ	Mylar 50V 0.01	1	
C10		ECKD1E223KB	Ceramic 25V 0.022	1	
C11		ECQM05221KZ	Mylar 50V 220P	1	
C12		ECQM05103KZ	Mylar 50V 0.01	1	
C13		ECQA10V47L	Electrolytic 10V 47	1	
C14		ECKD1E103KB	Ceramic 50V 0.01	1	
C15		ECKD1E473KB	Ceramic 25V 0.047	1	
C16		ECQA10V47L	Electrolytic 10V 47	1	
C17		ECKD1H270JA	Ceramic 50V 27P	1	
C18		ECKD1H101JA	Ceramic 50V 100P	1	
C19		ECQM05822KZ	Mylar 50V 0.0082	1	
C20,21		ECKD1E473KB	Ceramic 25V 0.047	2	
C22		ECKD1E220JA	Ceramic 25V 22P	1	
C23		ECQA16V10L	Electrolytic 16V 10	1	
C24		ECKD1E473KB	Ceramic 25V 0.047	1	
C25		ECQA10V47L	Electrolytic 10V 47	1	
C27		ECQA10V47L	Electrolytic 10V 47	1	
C28		ECKD1E473KB	Ceramic 25V 0.047	1	
C30		ECKD1H101JA	Ceramic 50V 100P	1	
C31		ECQM05333KZ	Mylar 50V 0.033	1	
C32		ECKD1E473KB	Ceramic 25V 0.047	1	
C33		ECQA10V47L	Electrolytic 10V 47	1	
C35		ECQM05333KZ	Mylar 50V 0.033	1	
C36		ECQM05103KZ	Mylar 50V 0.01	1	
C37		ECKD1E473KB	Ceramic 25V 0.047	1	
C38		ECQA10V47L	Electrolytic 10V 47	1	
C39,40		ECKD1H121JA	Ceramic 50V 120P	2	
C41		ECKD1H150JA	Ceramic 50V 15P	1	
C42		EVCZW20X44	Trimmer 20P	1	
C43		ECKD1E473KB	Ceramic 25V 0.047	1	
C44		ECQA10V47L	Electrolytic 10V 47	1	
C45		ECQM05223KZ	Mylar 50V 0.022	1	
C46-48		ECKD1H473KB	Ceramic 50V 0.047	3	
C49		ECKD1H5R0JA	Ceramic 50V 5.0P	1	
C50		ECQM05103KZ	Mylar 50V 0.01	1	
C51		ECKD1H101JA	Ceramic 50V 100P	1	
C52		ECQA10V1L	Electrolytic 10V 1	1	
C53		ECQM05223KZ	Mylar 50V 0.022	1	
C54		ECKD1E473KB	Ceramic 25V 0.47	1	
C55		ECQA10V47L	Electrolytic 10V 47	1	
C56,57		ECQM05103KZ	Mylar 50V 0.01	2	
C58		ECKD1E223KB	Ceramic 25V 0.022	1	
C59		ECQA10V47L	Electrolytic 10V 47	1	
C60		ECQM05102KZ	Mylar 50V 0.001	1	
C61		ECKD1H121JA	Ceramic 50V 120P	1	
C62,63		ECQM05392KZ	Mylar 50V 0.0039	2	
C64		ECKD1H101JA	Ceramic 50V 100P	1	
C65		ECQM05473KZ	Mylar 50V 0.047	1	
C66		ECQA16V10L	Electrolytic 16V 10	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
C67,68		ECQM05103KZ	Mylar 50V 0.01	2	
C69		ECQA10V47L	Electrolytic 10V 47	1	
C70		ECKD1E473KB	Ceramic 25V 0.047	1	
C71		ECQA10V47L	Electrolytic 10V 47	1	
C72		ECKD1E473KB	Ceramic 25V 0.047	1	
C73		ECKD1H5R0JA	Ceramic 50V 5.0P	1	
C74		ECQA10V47L	Elecbrolytic 10V 47	1	
C75		ECKD1E473KB	Ceramic 25V 0.047	1	
C76-78		ECKD1E473KB	Ceramic 25V 0.047	3	
C79,80		ECQM05103KZ	Mylar 50V 0.01	2	
C81		EVC1ZW20X44	Trimmer 20P	1	
C82		ECCD1H120JA	Ceramic 50V 12P	1	
C83		ECKD1H330JA	Ceramic 50V 33P	1	
C84		ECKD1E473KB	Ceramic 25V 0.047	1	
C85		ECQA10V47L	Electrolytic 10V 47	1	
C86		ECKD1E310KB	Ceramic 25V 0.01	1	
C87,88		ECQS1102A	Styrol 50V 1000P	2	
C89		ECQS1821A	Styrol 50V 820P	1	
C90		ECQS1221A	Styrol 50V 220P	1	
C91		ECQS1102A	Styrol 50V 1000P	1	
C92		ECQM05154	Mylar 50V 0.15	1	
C93		ECQM05103KZ	Mylar 50V 0.01	1	
C95		ECQA10V47L	Electrolytic 10V 47	1	
C96		ECKD1E473KB	Ceramic 25V 0.047	1	
C97		ECQA10V47L	Electrolytic 10V 47	1	
C98		ECKD1E473KB	Ceramic 25V 0.047	1	
C99		ECQA16V10L	Electrolytic 16V 10	1	
C100		ECQA50V1L	Electrolytic 50V 1	1	
C101		ECQA10V47L	Electrolytic 10V 47	1	
C102		ECQA50V1L	Electrolytic 50V 1	1	
C103		ECKD1H150JC	Ceramic 50V 15P	1	
C104		ECQA16V10L	Electrolytic 16V 10	1	
C105		ECKD1H820JA	Ceramic 50V 82P	1	
C106		ECQA16V10L	Electrolytic 16V 10	1	
C107		ECKD1H820JA	Ceramic 50V 82P	1	
C108		ECQM05103KZ	Mylar 50V 0.01	1	
C109		ECQM05273KZ	Mylar 50V 0.027	1	
C110-112		ECQA16V10L	Electrolytic 16V 10	3	
C113		ECQS1182A	Polystyrene 50V 1800P	1	
C114		ECQS1222A	Polystyrene 50V 2200P	1	
C115		ECQS1103A	Polystyrene 50V 0.01	1	
C116		ECQA10V100	Electrolytic 10V 100	1	
C117		ECQA16V10L	Electrolytic 16V 10	1	
C118		ECQA10V100	Electrolytic 10V 100	1	
C119		ECQM05104KZ	Mylar 50V 0.01	1	
C120		ECQA16V10L	Electrolytic 16V 10	1	
C121		ECQM05223KZ	Mylar 50V 0.022	1	
C122		ECKD1E473KB	Ceramic 25V 0.047	1	
C123		ECQA50V1L	Electrolytic 50V 1	1	
C125		ECKD1H5R0JA	Ceramic 50V 5.0P	1	
C126		ECQA10V47L	Electrolytic 10V 47	1	
C127		ECKD1E473KB	Ceramic 25V 0.047	1	
C128		ECKD1H5R0JA	Ceramic 50V 5.0P	1	
C129,130		ECQA10V100	Electrolytic 10V 100	2	
C134		ECKD1H150JA	Ceramic 50V 15P	1	
C135		ECQA50V1L	Electrolytic 50V 1	1	
C136-138		ECKD1E103KB	Ceramic 25V 0.01	3	
			Coils		
L1		VLQ70L221K	Peaking 220µH	1	
L2		VLQ0053		1	
L3,4		VLQ70L221K	Peaking 220µH	2	
L6		VLQ70L221K	Peaking 220µH	1	
L7		VLQ0074		1	
L8		VLQ70L221K	Peaking 220µH	1	
L9		VLQ0055		1	
L10		VLQ0074		1	
L11		VLQ70L221K	Peaking 220µH	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
L12		VLQ70L121K	Peaking 120µH	1	
L13,14		VLQ70L221K	Peaking 220µH	2	
L15,16		VLQ0074		2	
L17		VLQ0061	Choke 5.6mH	1	
L18		VLQ0056		1	
L19		VLQ70L221K	Peaking 220µH	1	
L20		VLQ0075		1	
L21		VLQ0076		1	
L22		VLQ0059		1	
L23		VLQ0077		1	
L24		VLQ0060		1	
L25		VLQ0053		1	
L26,27		VLQ70L221K	Peaking 220µH	2	
			Transformer		
T1		VLT0086		1	
			Crystal Oscillators		
Xtal 1		VSX0075		1	
Xtal 2		VSX0076		1	
			Filters		
LPF1		VLF0129	LPF	1	
BPF1		VLF0130	BPF	1	
BPF2		VLF0131	BPF	1	
			Miscellaneous		
		VSC0297	Shield Case	1	
		VSC0298	Shield Cover	1	
			MOTOR DRIVE AMP. CIRCUIT		
			BOARD ASSY		
			Transistors		
TR1-3		2SC828Q	Si NPN	3	
			Small Signal Amp.		
TR4		2SA719	Si PNP	1	
			AF Power Amp. & Driver		
TR5		2SA564Q	Si PNP	1	
			General Use for		
			Small Signal		
TR6		2SC1398Q	Si NPN	1	
			Medium Power Amp.		
TR7		2SC1162WTC	Si NPN	1	
TR8-14		2SC828Q	Si NPN	7	
			Small Signal Amp.		
TR15		2SA719R	Si PNP	1	
			AF Power Amp. & Driver		
TR16		2SA564Q	Si PNP	1	
			General Use for		
			Small Signal		

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
TR16		2SC1398Q	Si NPN	1	
			Medium Power Amp.		
TR18		2SC1162WTC	Si NPN	1	
TR19		2SC828Q	Si NPN	1	
			Small Signal Amp.		
			Diodes		
D1,2		MA150	Si	2	
			High Speed Switching		
D3		V03C	Si	1	
D4		RD7AM	Si	1	
			Zener		
D5,6		MA150	Si	2	
			High Speed Switching		
D7		V03C	Si	1	
D8		MA150	Si	1	
			High Speed Switching		
			Resistors		
R1		ERD14VJ153	15K	1	
R2		ERD14VJ103	10K	1	
R3		ERD14VJ333	33K	1	
R4		ERD14VJ472	4.7K	1	
R5		ERD14VJ562	5.6K	1	
R6		ERD14VJ391	390	1	
R7		ERD14VJ682	6.8K	1	
R8		ERD14VJ103	10K	1	
R9		ERD14VJ682	6.8K	1	
R10,11		ERD14VJ103	10K	1	
R12		ERD14VJ221	220	1	
R13		ERD14VJ103	10K	1	
R14		ERD14VJ561	560	1	
R15		ERD14VJ222	2.2K	1	
R16		ERD14VJ332	3.3K	1	
R17		ERD14VJ222	2.2K	1	
R18,19		ERD14VJ681	680	2	
R20		ERD14VJ472	4.7K	1	
R21		ERD14VJ153	15K	1	
R22		ERD14VJ103	10K	1	
R23		ERD14VJ333	33K	1	
R24		ERD14VJ472	4.7K	1	
R25		ERD14VJ562	5.6K	1	
R26		ERD14VJ391	390	1	
R27		ERD14VJ103	10K	1	
R28,29		ERD14VJ682	6.8K	2	
R30-32		ERD14VJ103	10K	3	
R33		ERD14VJ221	220	1	
R34		ERD14VJ103	10K	1	
			Capacitors		
C1		ECQM05123KZ	Mylar 50V 0.012	1	
C2		ECEA10V47L	Electrolytic 10V 47	1	
C3,4		ECQM05102KZ	Mylar 50V 0.001	2	
C5		ECEA16V10L	Electrolytic 16V 10	1	
C6		ECQM05102KZ	Mylar 50V 0.001	1	
C7		ECEA50V1L	Electrolytic 50V 1	1	
C8		ECEA16V1000L	Electrolytic 16V 1000	1	
C9		ECEA16V220L	Electrolytic 16V 220	1	
C10-12		ECEA16V10L	Electrolytic 16V 10	3	
C13		ECQM05183KZ	Mylar 50V 0.018	1	
C14		ECQM05682KZ	Mylar 50V 0.0068	1	
C15		ECEA16V220L	Electrolytic 16V 220	1	
C16		ECQM05123KZ	Mylar 50V 0.012	1	
C17		ECEA10V47L	Electrolytic 10V 47	1	

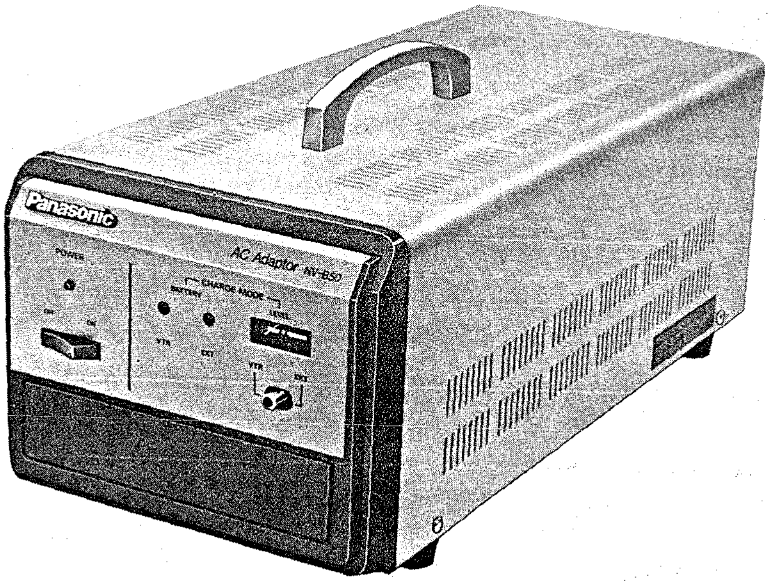
Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
C18,19.		ECQM05102KZ	Mylar 50V 0.001	2	
C20		ECEA16V10L	Electrolytic 16V 10	1	
C21		ECQM05102KZ	Mylar 50V 0.001	1	
C22		ECEA50V1L	Electrolytic 50V 1	1	
C23		ECEA16V100L	Electrolytic 16V 1000	1	
C24		ECEA16V220L	Electrolytic 16V 220	1	
C25,26		ECKD1E473MB	Ceramic 25V 0.047	2	
C28		ECKD1H330KB	Ceramic 50V 330P	1	
C30,31		ECKD1H470KB	Ceramic 50V 47P	2	
C32		ECKD1H330KB	Ceramic 50V 33P	1	
C33,34		ECKD1H101KB	Ceramic 50V 100P	1	
			Coils		
L1		VLQ0062	Choke 2mH	1	
L2		VLQ0063	18mH	1	
L3,4		VLQ0062	Choke 2mH	2	
			DEW SENSOR AMP. CIRCUIT		
			BOARD ASSY		
			Transistors		
TR1-4		2SC828Q	Si NPN	4	
			Small Signal Amp.		
			Resistors		
R1		ERD14VJ332	3.3K	1	
R2,3		ERD14VJ274	270K	2	
R4		ERD14VJ332	3.3K	1	
R5		ERD14VJ103	10K	1	
R6		ERD14VJ124	120K	1	
R7		ERD14VJ152	1.5K	1	
R8		ERD14VJ185	1800K	1	
R9		ERD14VJ103	10K	1	
R10		ERD14VJ151	150	1	
R11		ERD14VJ103	10K	1	
			Capacitors		
C1		ECQM05223KZ	Mylar 50V 0.022	1	
C2		ECQM05104KZ	Mylar 50V 0.1	1	
C3		ECEA50V1L	Electrolytic 50V 1	1	
C4		ECQM05103KZ	Mylar 50V 0.01	1	
C5		ECEA10V47L	Electrolytic 10V 47	1	
C6		ECEA25V3R3L	Electrolytic 25V 3.3	1	
C7		ECQM05103KZ	Mylar 50V 0.01	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			S.S.G. AMP. CIRCUIT		
			BOARD ASSY		
			Integrated Circuits		
IC1		BA308	Amp.	1	
IC2		MN115	1/2, 1/525 Frequency	1	
			Divider		
IC3		SN7400N	Quadruple 2-input positive	1	
			NAND Gates		
			Oscillators		
Xtal 1		VSX0077	Crystal	1	
			Transistors		
TR1		2SC828Q	Si NPN	1	
			Small Signal Amp.		
TR2,3		2SC1213R	Si NPN	2	
			Diodes		
D1		IN60	Si	1	
			Resistors		
R1		ERD14VJ473	47K	1	
R2		ERD14VJ154	150K	1	
R3-5		ERD14VJ103	10K	1	
R6		ERD14VJ332	3.3K	1	
R7		ERD14VJ682	6.8K	1	
R8		ERD14VJ181	180	1	
R9,10		ERD14VJ103	10K	2	
R11,12		ERD14VJ471	470	2	
R13		ERD14VJ103	10K	1	
R14		ERD14VJ182	1.8K	1	
R15		ERD14VJ272	2.7K	1	
R16		ERD14VJ182	1.8K	1	
R17		ERD14VJ470	47	1	
R18,19		ERD14VJ103	10K	2	
R20		ERD14VJ272	2.7K	1	
R20,21		ERD14VJ103	10K	2	
R22		ERD14VJ470	47	1	
			Capacitors		
C1		ECKD1H220KB	Ceramic 50V 22P	1	
C2		ECKD1H121KB	Ceramic 50V 120P	1	
C3		ECEA10V100L	Electrolytic 10V 100	1	
C4		ECEA10V47L	Electrolytic 10V 47	1	
C5		ECKD1E223KB	Ceramic 25V 0.022	1	
C6		ECKD1H121KB	Ceramic 50V 120P	1	
C7		ECSZ16EF4R7Q	Tantalum 16V 4.7	1	
C8		ECQM05393KZ	Mylar 50V 0.039	1	
C9		ECEA16V10L	Electrolytic 16V 10	1	
C10,11		ECEA10V47L	Electrolytic 10V 47	2	
C12		ECKD1E223KB	Ceramic 25V 0.022	1	
C13		ECKD1E102KB	Ceramic 25V 0.001	1	
			Coils		
L1		VLQ70L121K	Peaking 120μH	1	

Service Manual

AC Adaptor

NV-B50 -E -A -B


Panasonic
AC Adaptor NV-B50
POWER
OFF ON
CHARGE MODE
BATTERY
VTR EXT
LEVEL
VTR EXT

SPECIFICATIONS

Power Source:	110/120/220/240V AC, 60Hz
Power Consumption:	Approx. 97 watts
DC Output:	DC 12.6V
Max. Output Current:	2.5A (DC output cable) 1.0A (External charging connector)
Charging Time:	8 hours
Dimensions:	6-3/4"(W) × 14-9/16"(D) × 5-15/16"(H) 171(W) × 369(D) × 150(H) mm
Weight:	17.6 lbs. (8 kg)

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

Panasonic

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

INTRODUCTION

This unit is an AC adaptor developed for use as one part of the equipment used for a portable video system (NV-9400E/WV-3700). It can be used to simultaneously power both the portable video recorder and the color camera, and for simultaneous charging of the batteries in the video recorder and the one connected the external charging connector.

FEATURES

1. **Simultaneous Power Supply**
   This AC adaptor can be used for simultaneous power supply to the portable video recorder and to the color camera. Power supply to the color camera (WV-3700) is through the portable video recorder (NV-9400E).
2. **Charging of Battery Only**
   Because there is an external charging connector, it is possible to charge the battery only.
3. **Simultaneous Charging**
   The battery connected to the external charging connector can be charged while the battery in the video recorder is being charged.
4. **Overcharge-Prevention Circuitry**
   Special overcharge-prevention circuitry protects against damage to the battery even if charging is continued for a long time.
5. **Easy-to-read charge meter shows the battery charge condition at a glance.**

CONTROLS AND THEIR FUNCTIONS

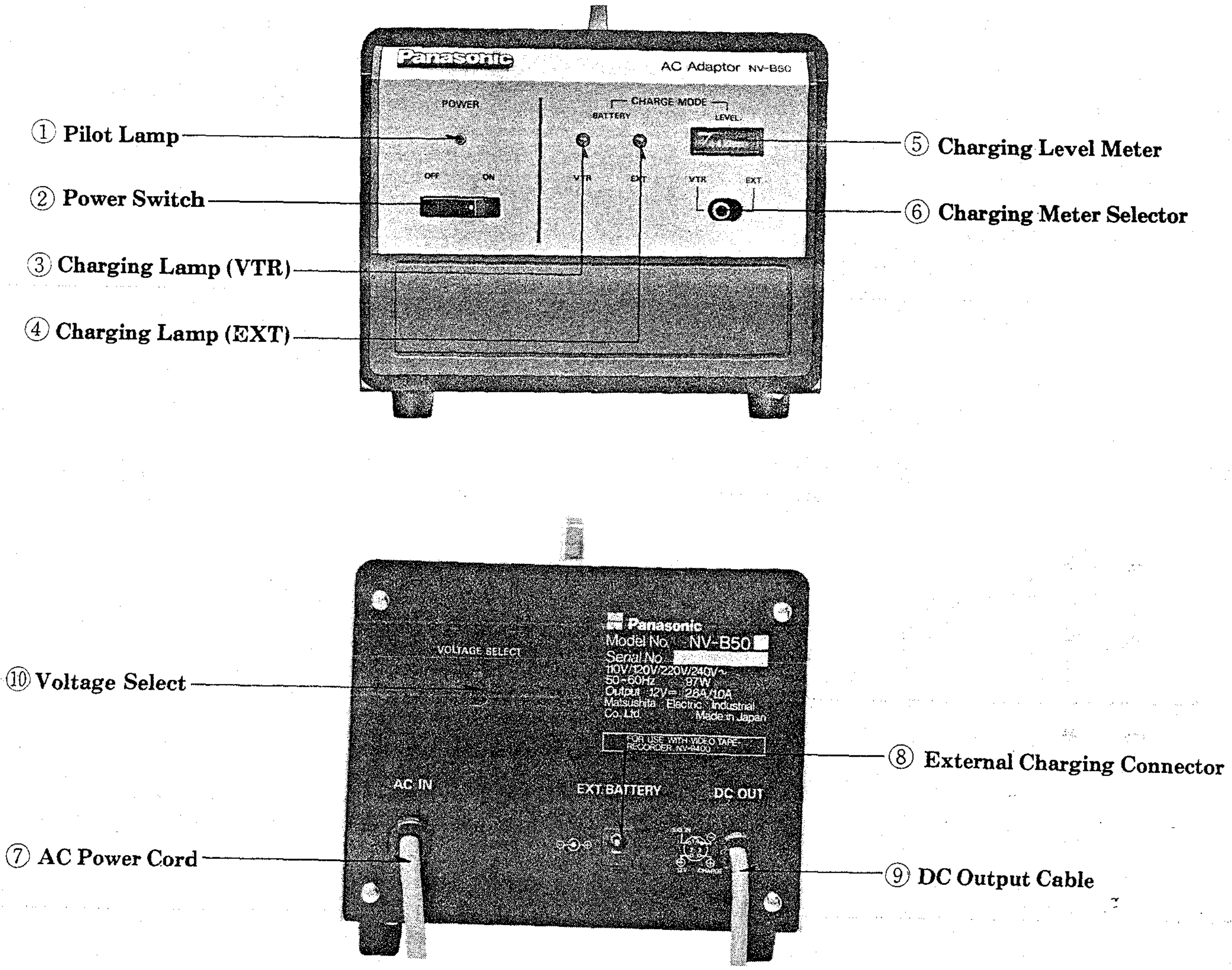

① Pilot Lamp
② Power Switch
③ Charging Lamp (VTR)
④ Charging Lamp (EXT)
⑤ Charging Level Meter
⑥ Charging Meter Selector
⑩ Voltage Select
⑦ AC Power Cord
⑧ External Charging Connector
⑨ DC Output Cable
Panasonic
AC Adaptor NV-B50
POWER
OFF
ON
CHARGE MODE
BATTERY
LEVEL
VTR
EXT
VOLTAGE SELECT
Model No. NV-B50
Serial No.
AC IN
EXT. BATTERY
DC OUT

Fig. 1

① **Pilot Lamp**
Illuminates when Power Switch ② is turned on.

② **Power Switch**
Power is supplied when turned on, and Pilot Lamp ① illuminates.

③ **Charging Lamp (VTR)**
This lamp illuminates while the portable video recorder battery is being charged.

④ **Charging Lamp (EXT)**
This lamp illuminates when a battery is being charged from the External Charging Connector ⑧.

⑤ **Charging Level Meter**
Indicates the charging condition of the video recorder battery or the battery connected to the External Charging Connector ⑧, depending on the setting of the Charging Meter Selector ⑥.

⑥ **Charging Meter Selector**
When set to appropriate position (either for portable video recorder battery or for battery connected to the external charging connector), battery-charging condition is shown by Charging Level Meter ⑤.

⑦ **AC Power Cord**
For connection to an ordinary household electrical outlet (110 V/ 120 V/220 V/240 V AC).

⑧ **External Charging Connector**
When a battery only is to be charged, connect its plug to this connector.

⑨ **DC Output Cable**
This cable is to be connected to the external power connector of the portable video recorder.

OPERATION

Operating this unit as a DC power source..

1. Connections

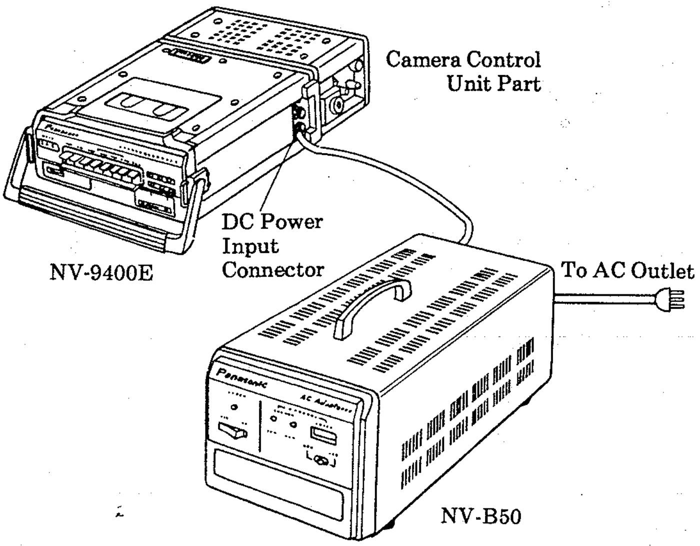

Camera Control Unit Part
DC Power Input Connector
NV-9400E
To AC Outlet
NV-B50

Fig. 2

Note: Be sure power to this unit is turned off before making connections.

2. Order of Operation

Turn the Power Switch ② on.
The Pilot Lamp ① and the Charging Lamp (VTR) ③ will illuminate. This completes preparations for supply of power.
Note: Before the Power Switch ② is turned on, be sure that the NV-9400E portable video recorder is in the Stop mode.

Operating this unit as a battery charger.

1. Charging the battery while in the portable VTR

Connections

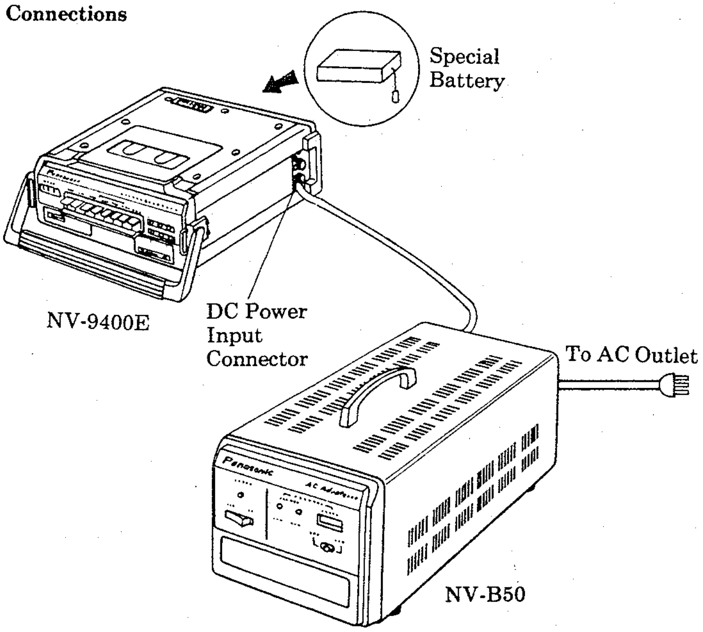

Special Battery
NV-9400E
DC Power Input Connector
To AC Outlet
NV-B50

Fig. 3

The internal battery will be charged when the Power Switch ② of this unit is turned on while the NV-9400E portable VTR is in the Stop mode.

- The Charging Lamp (VTR) ③ will illuminate during charging. Check to be sure that the battery is in the VTR, because this lamp will illuminate even if there is no battery in the VTR.
- If the camera is connected, be sure to turn the camera's power off.

2. Charging From the External Charging Terminals

Connections

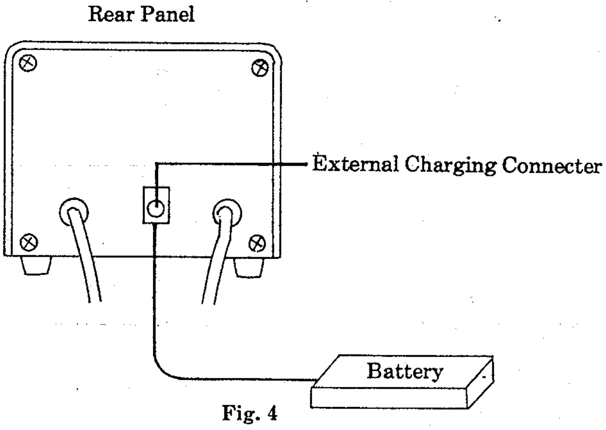

Rear Panel
External Charging Connecter
Battery

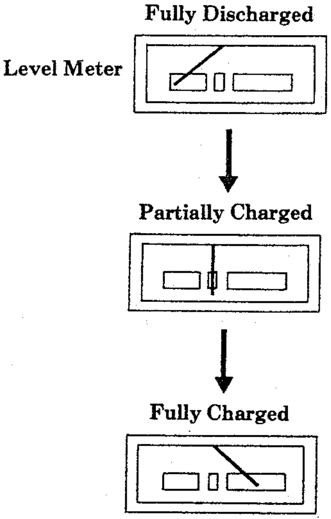
Fig. 4

As shown in the figure. connect the battery's plug to the External Charging Connector ⑧. Charging will begin when the Power Switch ② of this unit is turned on, and the Charging Lamp (EXT) ④ will illuminate.

3. Charging Check

When the Charging Meter Selector ⑥ is set to the "VTR" position, the Charging Level Meter ⑤ shows the charging condition of the video recorder internal battery.
When the Charging Meter Selector ⑥ is set to the "VTR" position, the Charging Level Meter ⑤ shows the charging condition of the battery connected to the External Changing Connector ⑧.

Charge Condition


Fully Discharged
Level Meter
Partially Charged
Fully Charged

Needle moves to left when the battery is fully discharged.

Needle gradually moves to right as battery becomes charged.

Charging is almost finished when needle right.

Fig. 5

- To prevent battery discharge, continue charging for 2 hours after needle has moved completely to the right.
- Complete charging takes about 8 hours.

Operation Notes

1. Do not use this unit where it cannot properly dissipate internal heat, such as on bedding or similar surfaces.
2. Keep unit and batteries away from flammable materials during battery charging.

Notes Concerning Battery Use

1. Always charge the battery after it has been used.
   A charge of about 8 hours is necessary for full charging.
2. If the battery is not used for a long time, be sure to charge it once every 6 months.
3. Usually a battery can be used for about 150 charge/discharge cycles. When the time between charges-becomes noticeably short, it is time to replace it.

Fig. 1 gives an approximation of the internal circuit of IC101, 102. Unregulated D.C. (+) is supplied to the input (pin 3) and ground (pin 4) (−). This powers the internal amplifier and reference voltage source. The internal reference voltage is brought out (pin 5) for filtering. This reference is ≅ 1.8 volt and is internally applied to one input of the amplifier. The external error signal input (pin 6) is compared with the internal reference and the output is applied to the base of Q_1 and the current output (pin 2) controlled by Q_1 and Q_2. In the NV-B50, this output drives external driver transistors TR102, 106; they in turn drive pass transistors TR101, 105, and 106. Within the IC, Q_3 is the output current detection transistor, sensing the voltage drop across external resistors R103, 124 (33 Ω), turns on when the drop reaches a predetermined level (≅0.3 to 0.4 volt) decreasing the base voltage of Q_1 and cutting off the output. This point is set by the bias of Q_3, controlled by R_2 and R_3. Refering to the block diagram (Fig. 2), it can be seen that the power transformer supplies two very similar groups of circuitry. One group (D101, TR101, IC101, etc.) supplies charging voltage and current to PN102, the plug for an external battery (only), whereas the other group (D107, TR104, 105, IC102, etc.) supplies the cable and plug (PN101) for the recorder/camera.

CIRCUIT DESCRIPTION

A voltage regulator Integrated Circuit (μPC141C) forms the basis for both regulator circuits within the NV-B50. The use of this IC provides for less ripple and current limited output (even under short circuit conditions) with a minimum of circuitry.

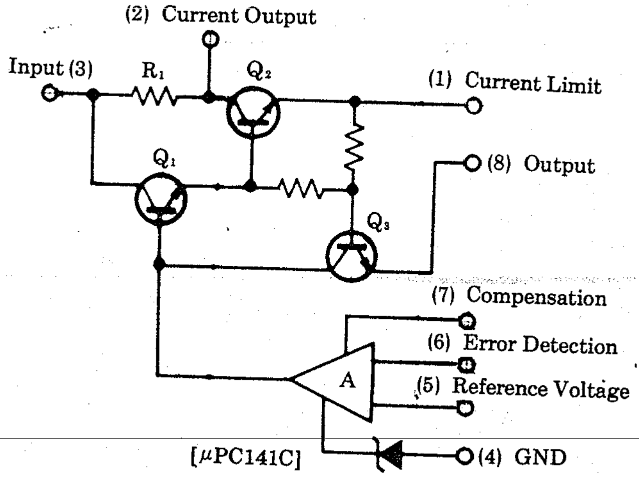


Fig. 6

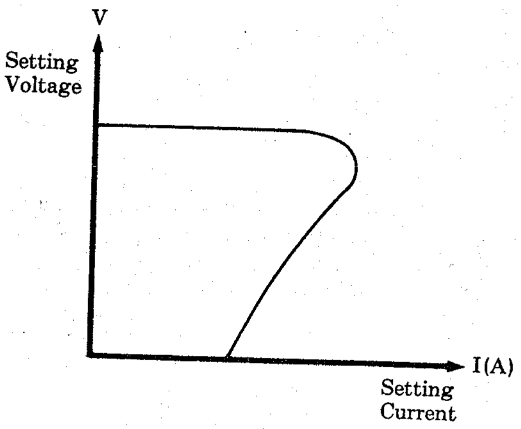


Fig. 7

DETAILED DESCRIPTION:

Note: Component numbers in parenthesis ( ) indicate the Power Supply/VCR Battery section.

Based upon the description of IC101 (102) above, the unregulated DC is made by bridge rectifier D101 (D107) and filtered by C102, 104 (C110, 112). Voltage regulation by IC101 (IC102) is carried by the driver transistor TR102 (TR106) to the pass transistor(s) TR101 (TR104, 105), which perform the actual regulation of the D.C. voltage, which then passes through the current sense element R103 (R124) and on to the output. High frequency noise is suppressed by C118 and C103 (C119 and C111), the IC internal reference is filtered by C106 (C114), and the internal amp compensation is C105 (C113). The output voltage is sensed by the resistive divider R112, R113, R108, R107, R114 for the external battery section, with TH101 for temperature compensation.

For the power supply/VCR battery charge section, the output voltage and current limiting is changed by relay RY102 as appropriable by sensing pin 1 of PN101 and turning TR107 on or off. In the charge mode, R125 is shunted, making the current sensing of IC102 more sensitive, and output voltage is determined by R133, R134, R135. In the power supply mode, the output voltage is set by R130, R131, R132. (In either mode, the divider is formed with R127, R128, R129.) The charging LED is turned on by TR103 for external battery and by the relay for the VCR section. R115 (R136) 3.9 Ω provides current sense and R116 (R137) provides calibration for the charging condition meter (M101), which is switched by S102 (External/VCR). D102 (D108) provides meter protection by limiting the voltage drop across R116 (R137) and D103 (D109) provides polarity protection. D105 provides +DC to the VCR to enable the Power Supply/Battery Charge switching automatically (via pin 1 of PN101, TR107 and Relay 102) when the VCR is turned on.

CHARGE VOLTAGE VS TEMPERATURE RESPONSE

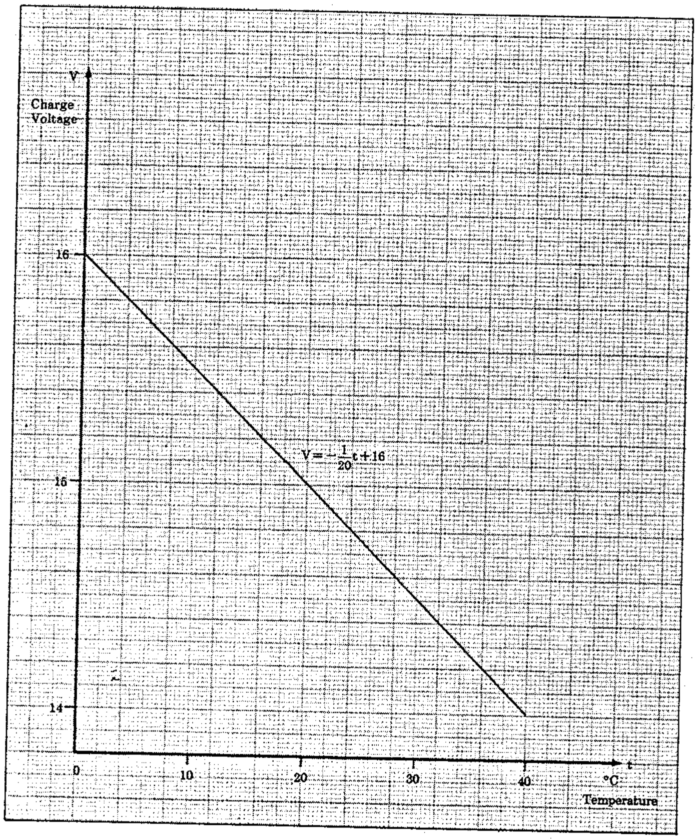


Fig. 8

ADJUSTMENT PROCEDURE

1. DC Power Source Circuit

1-1. Power Source Voltage

1. Connect a jumper wire between terminals (1) and (2) of connector PN101.
2. Put a 5.0 Ω (30 W) resistor between terminals (2) and (4) of connector PN101.
3. Connect a DC volt meter across the 5.0 Ω resistor.
4. Adjust R131 for a reading of 12.5 V.
5. After adjustment, remove the resistor.

1-2. Ripple Voltage

1. Connect a jumper wire between terminals (1) and (2) of connector PN101.
2. Put a 5.0 Ω (30 W) resistor between terminals (2) and (4) of connector PN101.
3. Connect a scope with X1 probe across the 5.0 Ω resistor.
4. Make sure that the ripple voltage is 5 mVp-p or less.
5. After confirmation, remove the resistor.

1-3. Regulation Current

1. Connect a jumper wire between terminals (1) and (2) of connector PN101.
2. Put a 3.6 Ω (50 W) resistor between terminals (2) and (4) of connector PN101.
3. Connect a DC volt meter across the 3.6 Ω resistor.
4. Adjust R125 to the point just beyond that where the voltage between terminals (2) and (4) of connector PN101 is cut off.
5. After adjustment, remove the resistor.

2. Charge Circuit

2-1. Charge Voltage

1. Put a 560 Ω (1/2 W) between terminals (3) and (4) of connector PN101.
2. Connect a DC volt meter across the 560 Ω resistor.
3. Adjust R135 for a reading 15.0 V at 20°C.
4. Gain access to connector P14, and put a 560 Ω (1/2 W) between terminals (1) and (3) of P14.
5. Adjust R114 for a reading 15.0 V at 20°C.
6. After adjustment remove the resistor and reinstail the connector P14.

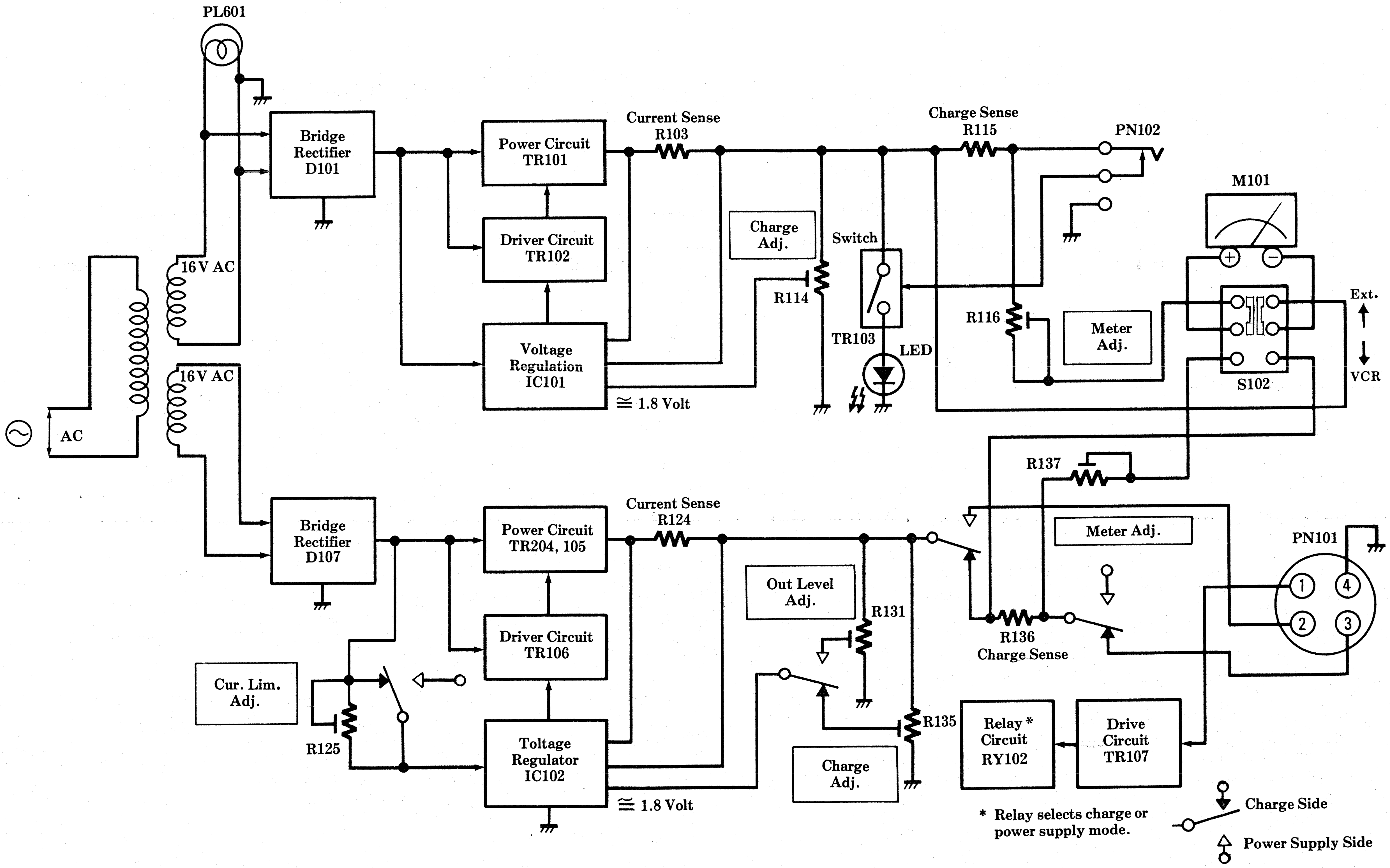
Note: If the operating temperature is not 20°C, refer Fig. 8, and calculate the setting charge voltage.

3. Meter Circuit

3-1. Meter

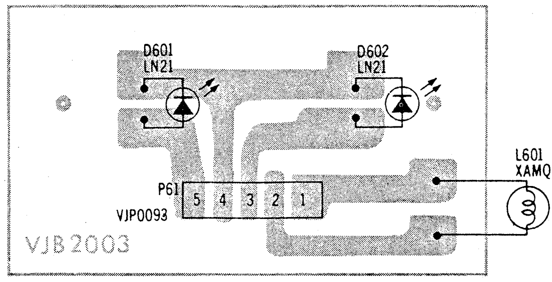
1. Put a 165 Ω resistor between terminals (3) and (4) of connector PN101.
2. Set the meter selector switch (S102) to VCR.
3. Adjust R137 so that the meter indicates the yellow portion.
4. Gain access to connector P14, and put a 165 Ω resistor between terminals (1) and (3) of connector P14.
5. Set the meter selector switch (S102) to EXT.
6. Adjust R116 so that the meter indicates the yellow portion.
7. After adjustment, remove the resistor and reinstall the connector P14.

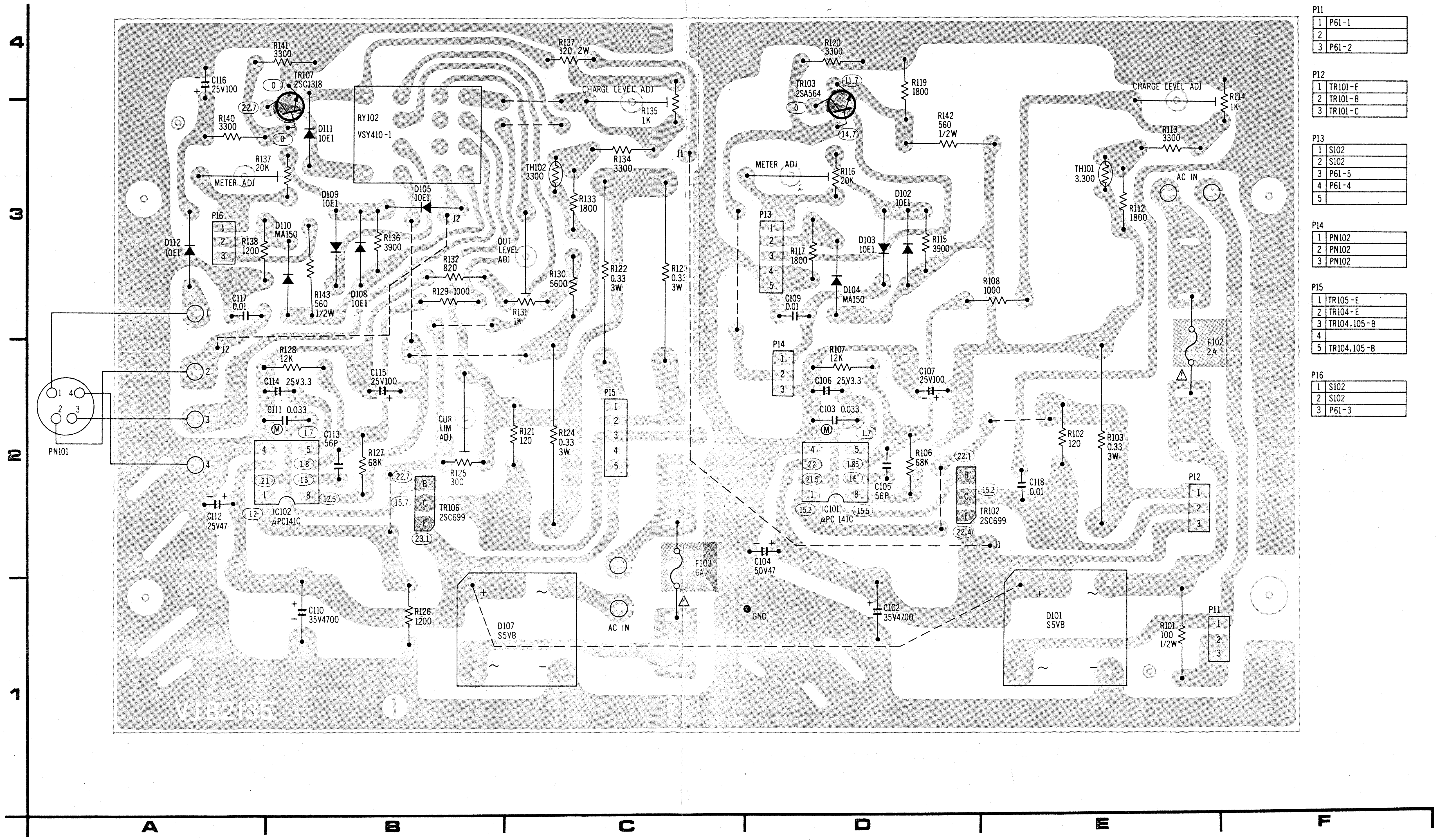
BLOCK DIAGRAM


PL601
AC
16V AC
16V AC
Bridge Rectifier D101
Power Circuit TR101
Driver Circuit TR102
Voltage Regulation IC101
≅ 1.8 Volt
Current Sense R103
Charge Adj.
R114
Switch
TR103
LED
Charge Sense R115
PN102
R116
Meter Adj.
M101
Ext.
VCR
S102
Bridge Rectifier D107
Power Circuit TR204, 105
Driver Circuit TR106
Toltage Regulator IC102
≅ 1.8 Volt
Current Sense R124
Cur. Lim. Adj.
R125
Out Level Adj.
R131
Charge Adj.
R135
R137
Meter Adj.
R136 Charge Sense
PN101
1
2
3
4
Relay* Circuit RY102
Drive Circuit TR107
Charge Side
Power Supply Side

* Relay selects charge or power supply mode.

CIRCUIT BOARD


D601
LN21
D602
LN21
L601
XAMQ27P20W
P61
5 4 3 2 1
VJP0093
VJB2003


4
3
2
1
A
B
C
D
E
F
R141
3300
TR107
2SC1318
C116
25V100
22.7
0
D111
10E1
R140
3300
R137
20K
METER ADJ
RY102
VSY410-1
R137
120 2W
CHARGE LEVEL ADJ
R135
1K
R134
3300
TH102
3300
R133
1800
J1
D105
10E1
D109
10E1
J2
P16
D112
10E1
D110
MA150
R138
1200
R136
3900
R132
820
OUT LEVEL ADJ
R130
5600
R122
0.33
3W
R123
0.33
3W
R129 1000
R131
1K
C117
0.01
R143
560
1/2W
D108
10E1
R128
12K
C114 25V3.3
C115
25V100
C111 0.033
1.7
C113
56P
CUR LIM ADJ
R121
120
R124
0.33
3W
P15
R127
68K
R125
300
IC102
μPC141C
22.7
15.7
TR106
2SC699
23.1
12.5
12
C112
25V47
PN101
C110
35V4700
R126
1200
D107
S5VB
AC IN
F103
6A
C104
50V47
GND
C102
35V4700
R120
3300
TR103
2SA564
11.7
14.7
R119
1800
R142
560
1/2W
METER ADJ
R116
20K
P13
D102
10E1
D103
10E1
R117
1800
D104
MA150
R115
3900
C109
0.01
R108
1000
P14
R107
12K
C106 25V3.3
C107
25V100
C103 0.033
1.7
C105
56P
IC101
μPC 141C
15.2
15.5
R106
68K
22.1
15.2
22.4
TR102
2SC699
C118
0.01
R102
120
R103
0.33
3W
CHARGE LEVEL ADJ
R114
1K
R113
3300
TH101
3.300
R112
1800
AC IN
F102
2A
P12
D101
S5VB
R101
100
1/2W
P11
VJB2135

P11

1	P61-1
2	
3	P61-2

P12

1	TR101-F
2	TR101-B
3	TR101-C

P13

1	S102
2	S102
3	P61-5
4	P61-4
5	

P14

1	PN102
2	PN102
3	PN102

P15

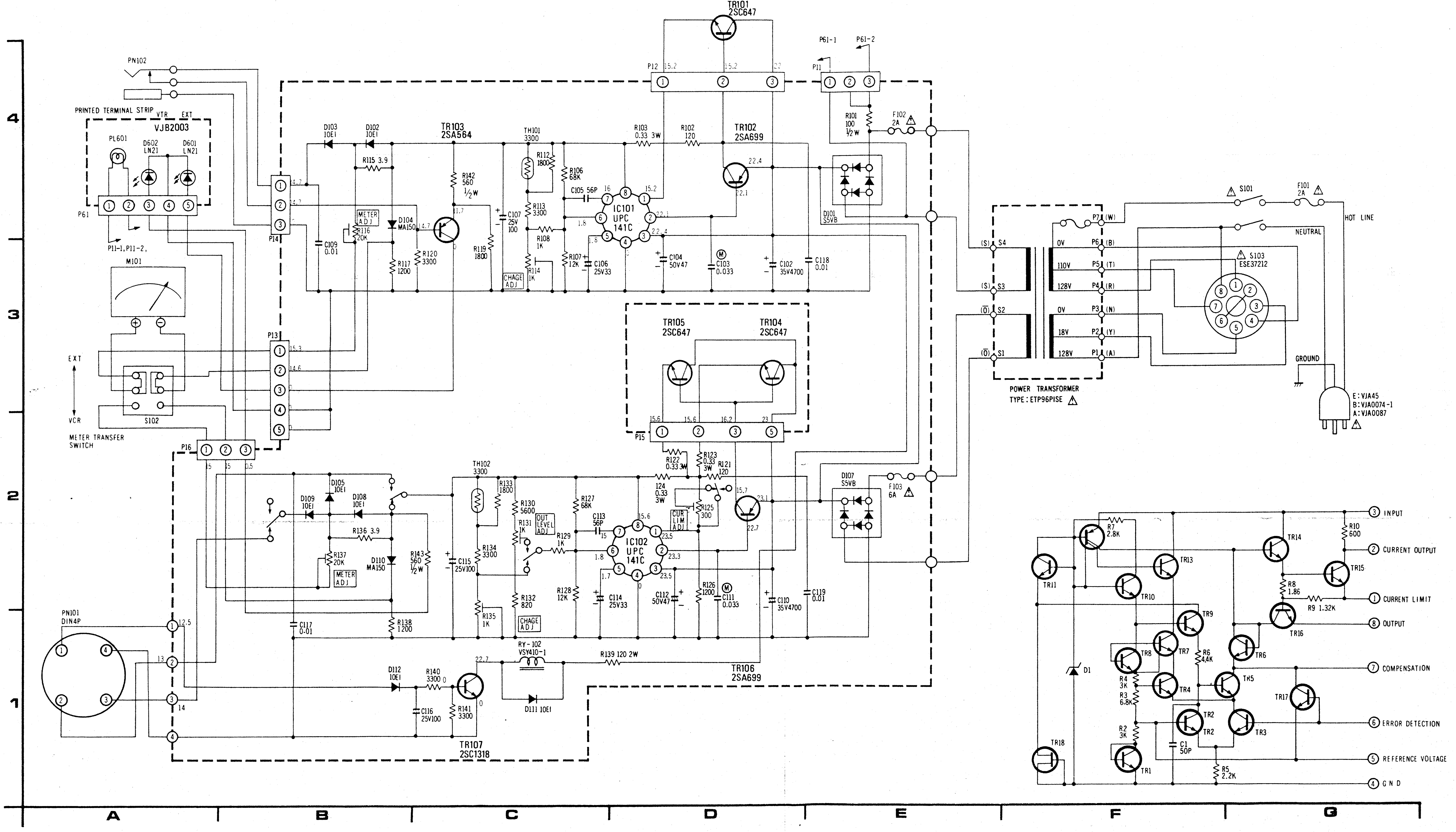
1	TR105-E
2	TR104-E
3	TR104,105-B
4	
5	TR104,105-B

P16

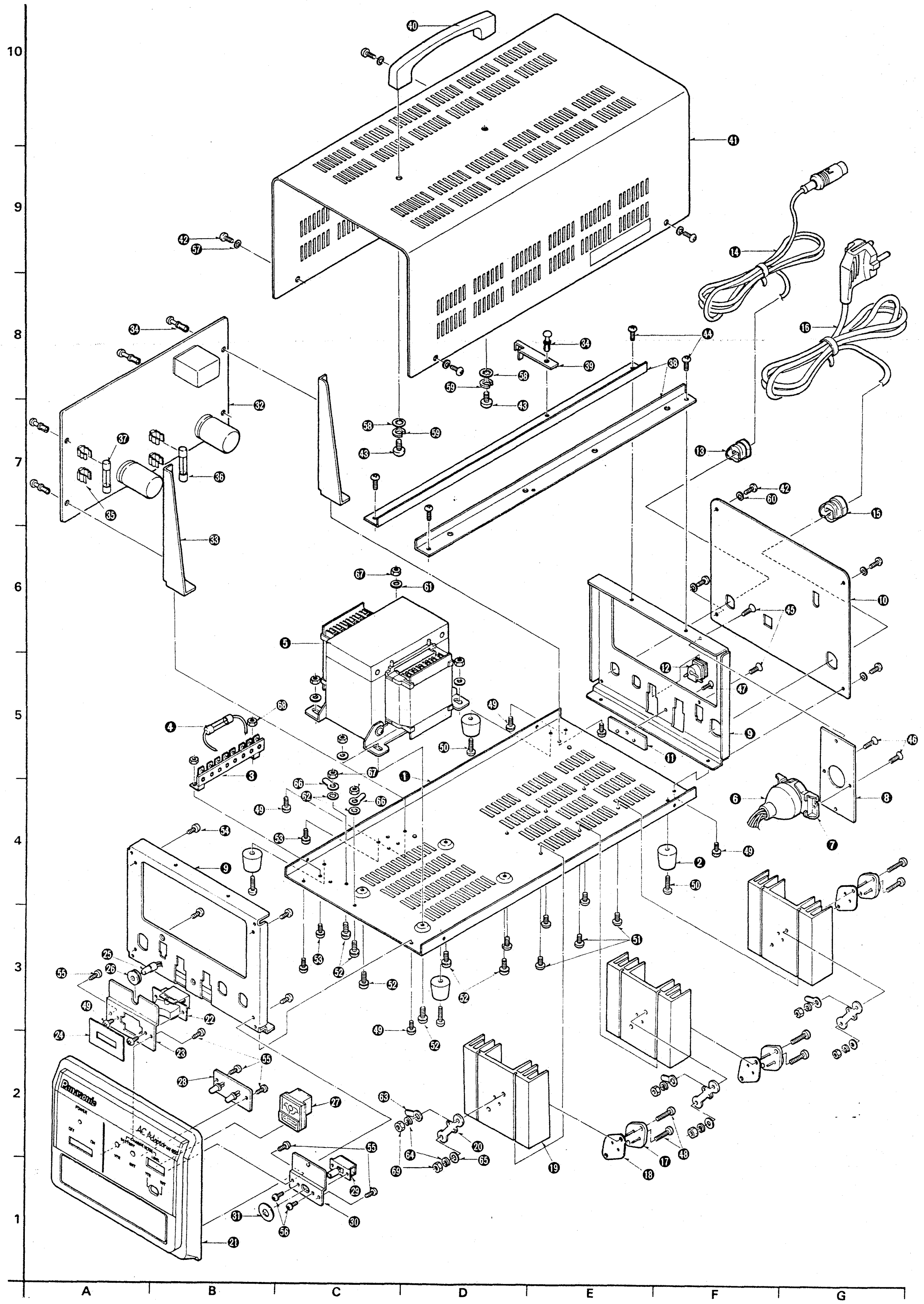
1	S102
2	S102
3	P61-3

SCHEMATIC DIAGRAM

Note: Measure the voltages of Transistors and ICs as following conditions.
TR101, 102, 103, IC101; The batteries connected to NV-B50 is being charged.
TR104, 105, 106, 107, IC102; The VCR NV-9400 connected to NV-B50 are working.


TR101 2SC647
TR102 2SA699
TR103 2SA564
TR104 2SC647
TR105 2SC647
TR106 2SA699
TR107 2SC1318
IC101 UPC 141C
IC102 UPC 141C
PN102
PRINTED TERMINAL STRIP VJB2003
VTR EXT
PL601
D602 LN21
D601 LN21
P61
P11-1, P11-2,
M101
EXT
VCR
S102
METER TRANSFER SWITCH
P12
P13
P14
P15
P16
P11
P61-1
P61-2
D103 10E1
D102 10E1
D104 MA150
R115 3.9
R116 20K
METER ADJ
C109 0.01
R117 1200
R120 3300
R142 560 ½W
R119 1800
C107 25V 100
TH101 3300
R112 1800
R113 3300
R108 1K
R114 1K
CHAGE ADJ
R106 68K
C105 56P
R107 12K
C106 25V33
R103 0.33 3W
R102 120
C104 50V47
C103 0.033
C102 35V4700
C118 0.01
R101 100 ½W
F102 2A
D101 S5VB
S101
F101 2A
HOT LINE
NEUTRAL
S103 ESE37212
GROUND
E:VJA45
B:VJA0074-1
A:VJA0087
POWER TRANSFORMER TYPE:ETP96PISE
0V
110V
128V
18V
S1
S2
S3
S4
P1
P2
P3
P4
P5
P6
P7
D105 10E1
D108 10E1
D109 10E1
R136 3.9
R137 20K
D110 MA150
R143 560 ½W
C117 0.01
R138 1200
TH102 3300
R133 1800
R130 5600
R131 1K
OUT LEVEL ADJ
R129 1K
R134 3300
C115 25V100
R135 1K
R132 820
R127 68K
C113 56P
R128 12K
C114 25V33
C112 50V47
R122 0.33 3W
R123 0.33 3W
R121 120
124 0.33 3W
CUR LIM ADJ
R125 300
R126 1200
C111 0.033
C110 35V4700
C119 0.01
D107 S5VB
F103 6A
PN101 DIN4P
D112 10E1
R140 3300
C116 25V100
R141 3300
RY-102 VSY410-1
D111 10E1
R139 120 2W
INPUT
CURRENT OUTPUT
CURRENT LIMIT
OUTPUT
COMPENSATION
ERROR DETECTION
REFERENCE VOLTAGE
GND
R7 2.8K
R10 600
R8 1.86
R9 1.32K
R6 4.4K
R4 3K
R3 6.8K
R2 3K
R5 2.2K
C1 50P
D1
TR1
TR2
TR3
TR4
TR5
TR6
TR7
TR8
TR9
TR10
TR11
TR13
TR14
TR15
TR16
TR17
TR18
A
B
C
D
E
F
G
1
2
3
4

EXPLODED VIEW



MECHANICAL REPLACEMENT PARTS LIST

Model No. NV-B50E

Notes:
1. * Be sure to make your orders of replacement parts according to this list.
   * "Ⓝ" in Remarks column indicates new parts.

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
1		VMK0165	Bottom Cover	1	
2		VMG0153	Foot	4	
3		VJR2L6PLUC	Lug	1	
4		XBA1F20NU14A	Fuse	1	
5		ETP96P15E	Power Transformer	1	
6		VMX0235	Voltage Select SW Cover	1	
7		ESE37212	Voltage Select SW	1	
8		VMA4298	Voltage Select SW Angle	1	
9		VMA2884	Panel Angle	2	
10		VGN1496	Rear Panel Sheet	1	
11		VMA2886	Socket Angle	1	
12		VJS1036	Ext. Charge Terminal	1	
13		VMP5021U	4 Pin Cable Bushing		
14		WKZ0026	4 Pin Cable	1	
15		VDB0293	AC Cord Bushing	1	
		VJA45	AC Cord	(1)	E Type
16		VJA0074	AC Cord	(1)	B Type
		VJA0087	AC Cord	(1)	A Type
17		2SC647-Q	Power Transistor	3	
18		N013A	Mica Sheet	3	
19		VSC0491	Heat Sink Plate	3	
20		VMX0270	Spacer	3	
21		VYP0475	Front Panel Unit	1	
22		VSW0028	Power Switch	1	
23		VMA2881	Power SW Angle	1	
24		VMF63	Power SW Cover	1	
25		XAMR14P110W	Pilot Lamp	1	
26		RHG202	Lamp Bushing	1	
27		VSE0014	Level Meter	1	
28		VEP2003A1	L.E.D. P.C. Board	1	
29		VSS0026	Meter Select Slide SW	1	
30		VMA2880	Level Meter Angle	1	
31		VMF0140	Sheet	1	
32		VEP2135C	Power Supply P.C. Board	1	
33		VMA2883	P.C. Board Angle	2	
34		VHN0011	Joint	4	
35		TJC6319	Fuse Holder	4	
36		XBA1F60NU14A	Fuse (6A)	1	
37		XBA1F20NU14A	Fuse (2A)	1	
38		VMA2882	Top Reinforcing Angle	2	
39		VMA3109	P.C. Board Reinforcing Angle	1	
40		VKH11	Handle	1	
41		VGK0463	Top Cover	1	
			SCREW		
42		XST3+6BS		8	
43		XSN6+10S		2	
44		XTV3+6FS		4	
45		XTS3+6F		2	
46		XSS3+6S		2	
47		XSS26+6S		1	
48		N041B		6	
49		XYN3+C6S		8	
50		XTV3+12FS		4	
51		XTV4+6FS		6	
52		XYN4+C10S		6	
53		XYN3+C8S		4	
54		XTV3+8S		4	
55		XTV3+6S		6	
56		XYN26+C5		2	
			WASHER		
57		XWC3A		4	
58		XWC6A		2	
59		XWA6A		2	
60		XWC3A		4	
61		XWG4D		4	
62		XWC4A		2	
63		N080		3	
64		N070		6	
66		VJH12	Lug	2	
			NUT		
67		XNG4ES		6	
68		XNG3ES		2	
69		N050A		6	

ELECTRICAL REPLACEMENT PARTS LIST

Model No. NV-B50E

Notes:

1. * Be sure to make your orders of replacement parts according to this list.
   * "Ⓝ" in Remarks column indicates new parts.
2. IMPORTANT SAFETY NOTICE
   Components identified by ⚠ have special characteristics important for safety.
   When replacing any of these components, use only the original ones.
3. Unless otherwise specified,
   All resistors are in OHMS (Ω), 1/4 W ± 5% carbon. K=1,000Ω, M=1,000 KΩ.
   All capacitors are in MICROFARADS (μF), ±10% P=μμF.

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
		Transistors		
TR101	2SC647-Q	Si NPN	1	
TR102	2SA699-Q	Si PNP	1	
TR103	2SA564	Si PNP	1	
TR104,105	2SC647-Q	Si NPN	2	
TR106	2SA699-Q	Si PNP	1	
TR107	2SC1318-Q	Si NPN	1	
IC101,102	VSI1003	IC Amplifier	2	
	(μPC141C)			
		Diodes		
D101	S5VB	Bridge	1	
D102,103	10E1	Si	2	
D104	MA150	Si	1	
D105	10E1	Si	1	
D107	S5VB	Bridge	1	
D108,109	10E1	Si	2	
D110	MA150	Si	1	
D111,112	10E1	Si	2	
D601,602	LN21	LED	2	
		Thermistor		
TH101,102	ERTD2FHL332S	3300	2	
		Resistors		
R101	ERD12TJ101	1/2W 100	1	
R102	ERD25TJ121	120	1	
R103	ERF3SKR33	Cement 3W 0.33	1	
R106	ERD25TJ683	68K	1	
R107	ERD25TJ123	12K	1	
R108	ERD25TJ102	1K	1	
R112	ERD25TJ182	1.8K	1	
R113	ERD25TJ332	3.3K	1	
R114	EVLS6AA00B13	Variable 1K	1	
R115	ERD25TJ3R9	3.9	1	
R116	EVLS6AA00B24	Variable 20K	1	
R117	ERD25TJ122	1.2K	1	
R119	ERD25TJ182	1.8K	1	
R120	ERD25TJ332	3.3K	1	
R121	ERD25TJ121	120	1	
R122-124	ERF3SKR33	Cement 3W 0.33	3	
R125	EVLS6AA00B32	Variable 300	1	
R126	ERD25TJ122	1.2K	1	
R127	ERD25TJ683	68K	1	
R128	ERD25TJ123	12K	1	
R129	ERD25TJ102	1K	1	
R130	ERD25TJ562	5.6K	1	
R131	EVLS6AA00B13	Variable 1K	1	
R132	ERD25TJ821	820	1	
R133	ERD25TJ182	1.8K	1	
R134	ERD25TJ332	3.3K	1	
R135	EVLS6AA00B13	Variable 1K	1	
R136	ERD25TJ3R9	3.9	1	
R137	EVLS6AA00B24	Variable 20K	1	
R138	ERD25TJ122	1.2K	1	
R139	ERG2ANJ121	Metal Oxide 2W 120	1	
R140,141	ERD25TJ332	3.3K	2	
R142,143	ERD12TJ561	1/2W 560	2	
		Capacitors		
C101	ECQU1A103MC	Mylar 0.01	1	
C102	ECET35R4700S	Electrolytic 35V 4700	1	
C103	ECQM05333KZB	Mylar 50V 0.033	1	
C104	ECEA1HS470	Electrolytic 50V 47	1	
C105	ECCW1H560KC	Ceramic 10^4V 56P	1	
C106	ECEA25V3R3L	Electrolytic 25V 3.3	1	
C107	ECEA1ES101	Electrolytic 25V 100	1	
C109	ECKW1H103PF	Ceramic 10^4V 0.01	1	
C110	ECET35R4700S	Electrolytic 35V 4700	1	
C111	ECQM05333KZB	Mylar 50V 0.033	1	
C112	ECEA1HS470	Electrolytic 50V 47	1	
C113	ECCW1H560KC	Ceramic 10^4V 56P	1	
C114	ECEA25V3R3L	Electrolytic 25V 3.3	1	
C115,116	ECEA1ES101	Electrolytic 25V 100	2	
C117-119	ECKW1H103PF	Ceramic 10^4V 0.01	3	
		Relay		
RY102	VSY410-1		1	
		Connectors		
P11,12	VJP0089	3 Pin	2	
P13	VJP0090	5 Pin	1	
P14	VJP0089	3 Pin	1	
P15	VJP0090	5 Pin	1	
P16	VJP0089	3 Pin	1	
		Fuse		
F101	XBA1M20NU100	2A	1	
F102,103	XBA1F40NU14A	4A	2	
		Transformer		
T101	ETP9615E		1	
		Lamp		
L601	XAMR14P110W	Pilot	1	
		Meter		
M101	VSE0014		1	
		Plags		
PN101	VJP54N	4 Pin	1	
PN102	VJS1036	External Change	1	
		Switches		
S101	VSW0028	Power	1	
S102	VSS0026	Slide	1	
		Housings		
P11,12	VJS1020	3P	2	
P13	VJS1021	5P	1	
P14	VJS1020	3P	1	
P15	VJS1021	5P	1	
P16	VJS1020	3P	1	
P61	VJS1021	5P	1	